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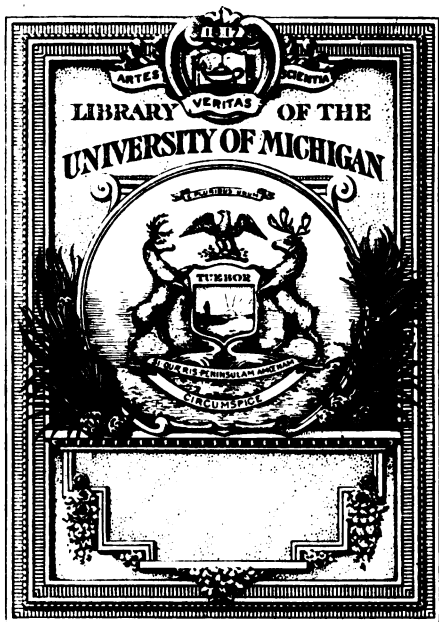
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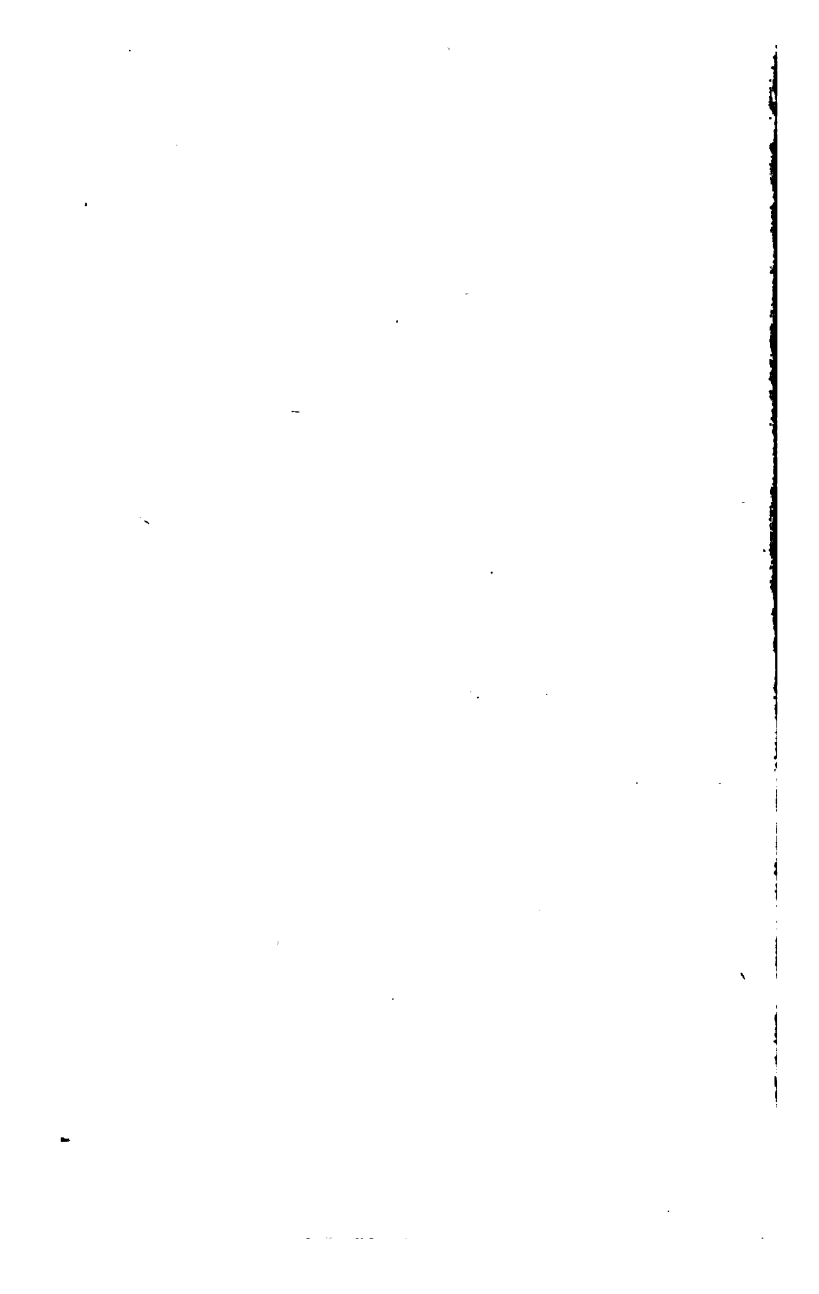
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T H E
Gentleman's Diary,
O R T H E
M A T H E M A T I C A L R E P O S I T O R Y ;
A n A L M A N A C K
F o r t h e Y E A R o f o u r L O R D 1756.

B E I N G
T h e B I S S E X T I L E , o r L E A P - Y E A R .
C o n t a i n i n g m a n y u s e f u l a n d e n t e r t a i n i n g P a r t i c u l a r s .
p e c u l i a r l y a d a p t e d t o t h e i n g e n i o u s G e n t l e m e n e n
g a g e d i n t h e d e l i g h t f u l S t u d y a n d P r a c t i c e o f t h e
M A T H E M A T I C K S .

T h e S i x t e e n t h *Almanack* p u b l i s h e d o f t h i s K i n d ;
a n d t h e F o u r t h o f t h e N E W S T Y L E i n E n g l a n d .

— Quâ causâ argentea Phœbe
Passibus haud æquis graditur; cur subdita nulli
Haëtenus Astronomo, numerorum fræna recusat:
Cur remeant Nodi, curque Auges progrediuntur.
— Quantis resuum vaga Cynthia pontum
Viribus impellit; dum fractis fluctibus ulvam
Deserit, ac Nautis suspectas nudat arenas,
Alternis vicibus suprema ad littora pulsans.

L O N D O N ,
P r i n t e d f o r t h e C o m p a n y o f S T A T I O N E R S .
M D C C L V I .

Hist. of Sci.
Bower
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ADVERTISEMENT.

ALL Persons who are pleased to be CONTRIBUTORS to this DIARY; by answering the QUESTIONS, *ÆNIGMAS*, &c. or by sending us new ones, or other Subjects proper for the WORK; are desired to send them, and their Solutions, along with them, before the first Day of May 1756, directed for *The Authors of the GENTLEMAN'S DIARY*, to be left with Mr. JOSEPH HOW, at the *White Horse* at Cripplegate, LONDON: or, with Mr. THOMAS PEAT, in Castlegate, Nottingham (Post paid.)

To the PUBLICK.

HAVING always more Room in the Kalendar Part of our Diary than we can possibly fill up with good *Weather*; we expect that an exact Account of all the FAIRS in England, as fixed since the Regulation of the Style, will supply that Room better than bad *Weather*; and also be of more general Service to *Tradesmen*, *Dealers*, &c. according to the *Plan* in the KALENDAR this Year; and if this be agreeable, shall for the future publish them annually, according to the best Information we can procure from our Contributors in their respective Neighbourhoods, &c.

Question proposed in a Letter from Mr. Christopher Cooke
of Burton near Loughborough.

Qu. If Pope Gregory XIII. in 1582 (which is 173 Years since,) did reform the *Ephemeris*, setting it forward 11 Days; and did not at the same Time make a proper Deduction of eleven Minutes, to bring the Year to a precise Length; then they which go by *that Style* must be wrong again now, and consequently we. But, if in Case the Year was at the Time abovementioned reduced to an exact Length,—then how comes it to pass at our late Regulation, that we, who have followed the *Julian Epochs* ever since 45 Years before the Birth of CHRIST, as it was then settled, should be no more than eleven Days in an Error?

JANUARY hath xxxi Days.

New Moon	the 2 Day, 48 Min. before 1 Morn.	1	23	0
First Quarter	the 9 Day 28 Min. past 7 Morn.	6	22	30
Full Moon	the 17 Day, 3 quarters after 10 Morn.	11	21	48
Last Quarter	the 24 Day, 5 Min. past 6 at Night.	16	20	56
New Moon	31 Day, a Quart r past Noon.	21	19	53
		26	18	42

1	Th	Circumcision, New Year's Day.	Rises	1	34
2	F	The Days are now upon the increase.	Sets	0A	35
3	S	having gained about 13 min.	6A	10	1 20
4	D	2 Sunday after Christmas.	7	20	2 24
5	M	Old Christmas Day.	8	34	3 15
6	Tu	Epiph. CHRIST'S * app. to Gentiles.	9	43	4 0
7	W	Days now grow longer, &c.	10	49	4 45
8	Th	Lucian, Priest and Martyr.	11	53	5 20
9	F	Canterbury.	Morn.	6	12
10	S	Princess ELIZABETH born.	0	57	6 57
11	D	1 Sunday after Epiphany.	1	59	7 37
12	M	Old New Years Day. Plow-Monday.	2	59	8 23
13	Tu	Hilary, Bish and Conf. <i>Preston, Lanc</i>	3	58	9 8
14	W	Days increased half an hour.	4	56	9 56
15	Th	<i>Barston, York shire.</i>	5	49	10 42
16	F	<i>Hickford, Lanc.</i>	6	37	11 35
17	S	<i>Tavistock, Devonshire.</i>	Rises	Morn.	
18	D	2 Sunday after Epiphany.	5A	45	0 27
19	M	Day 8 hours long. <i>Preston, Lanc.</i>	6	53	1 17
20	Tu	Oct. Hil. 1. Ret. <i>fabian B. of Rome</i>	8	3	2 7
21	W	<i>Agnes, Rom. V. & Mar. Bristol.</i>	9	14	2 56
22	Th	<i>Win. Span. Deac Mar. Shefford, Bedf</i>	10	28	3 44
23	F	Hilary Term begins.	11	43	4 37
24	S	<i>Derby. Shirley-Street, Warw.</i>	Morn	5	27
25	D	3 Sun. aft. Epiph. St. PAUL's Conv.	0	57	6 18
26	M	Nights are now growing shorter.	2	11	7 14
27	Tu	Quind. Hil. 2. Ret.	3	25	8 10
28	W	Day 8 hours and half long.	4	33	9 5
29	Th	<i>Grampond, Cornwall.</i>	5	35	10 2
30	F	K. CHARLES I. Martyr'd at <i>White-</i>	6		11 1
31	S	<i>Hall 12 min. past 1, 1649.</i>	Rises	12	0

M D	☉ Rises	☉ Sets	☿ Rises	♂ Sets	♀ Sets	☿ Rises	☿ Sets
1	8h 4'	3 56'	5A 27'	0M 43'	8M 36'	5A 10'	7 M 5'
6	8 0	4 05'	5 8	0 24'	8 5	5 23'	7 21'
11	7 55	4 54'	4 49'	0 57'	37 5	36 7	34 8
16	7 50	4 10'	4 32'	11A 40'	7 9	5 51'	7 43'
21	7 43	4 17'	Rises	11 20'	6 42'	6 7	49 11
26	7 36	4 26'	7M 28'	11 06'	16 6	23 7	50 13

FEBRUARY hath xxix Days.

M ☉ D
D South.

First Quarter the 8 Day, half past 4 Morn.
Full Moon the 16th, 19 min. past 2 Morn.
Last Quarter the 23d, 42 m. past 1 Morn.

17 ^a	7
6	15 38
11	14 0
16	12 20
21	10 30
26	8 40

M	W	Sundays, Holy and remarkable Days,	Rises	Moon
D	D	Length, Incr. Days, Terms, Fairs, &c.	and Sets	South

1	D	4 Sunday after Epiphany.	5 A 59	0 A 52
2	M	Candlemas, or Purif. B. V. Mary.	7 11	1 44
3	Tu	Blasius, Bish. and Mart. Cr. Pu. 3 Ret.	8 22	2 33
4	W	(Bath, Som. 3. Lynn, Norf.	9 29	3 21
5	Th	Agatha Sicil. V. and M. Plymouth.	10 34	4 5
6	F	Days are now 9 hours and 24 minutes;	11 37	4 47
7	S	and Nights 14 hours 36 min. long.	Morn.	5 29
8	D	5 Sunday after Epiphany.	0 40	6 12
9	M	Namptwich, Chesh. Stamford, Linc.	1 41	6 59
10	Tu	Octab. Purif. 4 Ret.	2 38	7 43
11	W	Llandyffel, Monm.	3 33	8 30
12	Th	Term ends.	4 26	9 23
13	F	Old Candlem. Dorchester. Doncaster.	5 11	10 12
14	S	Valentine, Bish. and M. Bromley, K.	5 51	11 5
15	D	Septuagesima Sunday.	6 27	11 56
16	M	Days are now increased and Nights	M Rises	Morn.
17	Tu	shortened 2 hours and 20 min.	6 A 58	0 49
18	W	Sun-Eaton, Warwicksh.	8 13	1 40
19	Th	Beverley, Yorkshire.	9 29	2 29
20	F	Llandaff, Glam.	10 45	3 22
21	S	Norton, Oxf.	Morn.	4 12
22	D	Sexagesima Sunday.	0 15	5 9
23	M	Godalming, Surry. Oundle, Northa. (Fast)	1 13	6 4
24	Tu	St. MATTHIAS Ap. & M. Bath.	2 22	6 50
25	W	Fewersham, Kent. Caernarvon.	3 25	7 54
26	Th	Oundle, Northampt.	4 20	8 52
27	F	Day 10 hours and above 3 quar. long	5 6	9 52
28	S	Chastelfield, Derbyshire.	5 46	10 42
29	D	Quinquagesima or Shrove Sunday.	6 17	11 35

M D	☉ Rises	☉ Sets	☿ Rises	☿ Sets	♂ Rises	♂ Sets	♀ Rises	♀ Sets	♂ Sets	♂ Sets	Cl. fast.
1	7 ^h 26'	4 ^h 35'	7 M 6	10 A 37	5 M 47	5 A 40	4 A 50	14	11		
6	7 18	4 42	6 47	10 16	5 25	5 57	5 24	14	34		
11	7 10	4 51	6 28	9 56	5 5	5 13	5 58	14	46		
16	7 0	5 06	5 10	9 35	4 47	7 29	6 31	14	40		
21	6 51	5 10	5 53	9 14	4 31	7 45	6 55	14	35		
26	6 41	5 20	5 35	8 53	4 15	7 3	7 6	13	33		

MARCH hath xxxi Days.

M ☉ Decl.
D South

New Moon 1 Day, 6 min. past 2 in the Morning.	18	20
First Quarter the 9th, a quarter past 1 Morning.	66	27
Full Moon the 16th, 26 min. past 3 Aft noon.	114	30
Last Quarter the 23d, 3 quarters after 8 Morning.	162	32
New Moon the 30th, 7 min. past 5 Afternoon.	211	North
	261	25

1 M	David Archb. Min.v. ☉ Ec. invif.	7	12	1	14
2 Tu	Cedde, or Chad. B. Litc. Shreve Tued.	8	19	1	57
3 W	Ash-Wednesday. 1st Day of Lent.	9	24	2	42
4 Th	Melton Mowbray, Leic. Darlington, Dur.	10	30	3	26
5 F	Blandford, Dorsetshire.	11	31	4	9
6 S	Bourne, Lin. Walden, Eff. Laxenham, Suff.	Morn.		4	54
7 C	Quadragesima, 1 Sunday in Lent.	0	30	5	38
8 M	Corsham, Wilts (7) and Stoke, Suff.	1	27	6	27
9 Tu	Day 12 hours 18 min. long.	2	19	7	16
10 W	Ember Week.	3	8	8	5
11 Th	Days are now encreased 3 hours & half.	3	51	8	56
12 F	Greg. M. B. of R. & C. Culliford, Dev.	4	30	9	48
13 S	Days are increasing every Day.	5	2	10	41
14 C	Reminiscere, 2 Sunday in Lent.	5	23	11	34
15 M	Oakham, Rut. Ofwestry, Shropsh. Langa.	Rises Morn.			
16 Tu	Pensance, Cornw. [dock.	7 A	16	0	27
17 W	Hariff, Hunt. Malmshury, Wilts.	8	35	1	20
18 Th	Ed. K. of W. Sax. Loughbro' Leic. Workop.	9	53	2	13
19 F	Abbot's Bromley, Stat. Ruthin, Denb. ☉ in	11	10	3	8
20 S	Durh. Dolton, Dev. [vs 19. d. 15 h. 54'	Morn.		4	3
21 C	Oculi. 3 Sunday in Lent.	0	23	4	57
22 M	Downes, Devon.	1	28	5	57
23 Tu	Aylsham, Nort. Bodmin Corn. Skipt. Yor.	2	23	6	55
24 W	Llanerchemish Caer. Skirley St. War. (Fast.	3	13	7	48
25 Th	Annunc. Lady Day. Pr. Edward bor.	3	52	8	44
26 F	Gloucester. Nampwich, Chesh. St. Albans	4	26	9	35
27 S	Atherstone, War. Prest. Lan. Woodbridge.	4	56	10	17
28 C	Lætare. 4 S. in Lent. Midlent Sund.	5	22	11	10
29 M	Stourbridge, Worc. Cobham, Surrey, 28.	Sets		11	50
30 Tu	Days are now 12 hours and 40 m. long.	7 A	19	0 A	42
31 W	Durham. lasts 3 days. Midhurst, Sussex.				

M D	☉ Rises	☉ Sets	h Rises	h Sets	☿ Rises	☿ Sets	♀ Rises	♀ Sets	♂ Rises	♂ Sets	Cl. fast
1	6h 38'	5h 23'	5 M 21	8 A 36	4 M 3	8 A 15	7 A 1	13'	12		
6	6 28	5 33	5 4	8 15	3 50	8 32	6 30	12	11		
11	6 18	5 43	4 48	7 53	3 37	8 49	Rises	10	57		
16	6 8	5 53	4 31	7 32	3 21	9 6	5 M 29	9	3		
21	5 58	6 34	4 14	7 11	3 11	9 24	5 14	8	6		
26	5 48	6 13	3 57	6 49	3 9	9 47	5 3	6	33		

APRIL hath xxx Days.

M D Decl. North.

First Quarter the 7 Day, 10 min. past 8 Night.

Full Moon the 15th, 41 m. past 1 Morning.

Last Quarter the 21st, 21 m. after 4 Afternoon.

New Moon the 29th, 36 m. past 8 Morning.

1	Th	All Fools Day, Coventry. Sandwich, K.	8	A	23	1	A	23
2	F	Salisbury, Wilts. Lutterworth, Leic.	9	27	2			9
3	S	Northampton. Chichester, Suff. Tocester.	10	28	2			53
4	C	Judica, 5 Sunday in Lent.	11	27	3			38
5	M	Old Lady D. Huntingdon. Doncaster.	Morn.		4			25
6	Tu	Epping, Essex. Rochford, Essex.	0	20	5			15
7	W	Atherstone, Warwicksh.	1	10	6			1
8	Th	Days increased 5 hours and half.	1	54	6			52
9	F	Days 13 hours 20 min. long.	2	34	7			43
10	S	Alnwick, Cumb.	3	8	8			35
11	C	Palm Sunday. 6 Sunday in Lent.	3	39	9			29
12	M	Halwibisfe. Northum. Hickfield. Hamp.	4	7	10			23
13	Tu	Athbourn, Derb. Budworth, Chesh. Orleton.	4	35	11			13
14	W	Days now encrease very fast.	5	3	Morn.			
15	Th	Bewley, Hampshire.	D	Rises	0			6
16	F	Dilton's Marsh, Wilts. Binbrooke, Linc.	8	A	59			1
17	S	Malm'sbury Wilts. (always on G. Fr.) East.	10	16	1			58
18	C	EASTER DAY. Our SAV. Refur.	11	26	2			57
19	M	Easter Monday.	Morn.		3			56
20	Tu	Easter Tuesday.	0	28	4			55
21	W	Modbury, Devonsh Romney, Kent.	1	21	5			52
22	Th	Shrewsbury. Gifforough, Yorksh.	2	4	6			46
23	F	St. GEORGE. Derby. Northampton.	2	39	7			40
24	S	Lincoln. Cirencester, Glou. Orleton, Heref.	3	8	8			27
25	C	Low Sunday. 1 Sunday after Easter.	3	35	9			15
26	M	Prince WILLIAM born. [St. MARK	3	59	10			1
27	Tu	Boroughbridge Yorksh Heldzeray, Dev.	4	22	10			44
28	W	Soburn, Cambr. Aberforth, Yorksh.	4	45	11			29
29	Th	Market Harbo' Leic. Newchurch, Lanc.	D	Sets	0	A		14
30	F	Gifforough, Yorksh.	8	A	27	0		58

D	☉ Rises	☉ Sets	☽ Rises	☽ Sets	☿ Rises	☿ Sets	♂ Rises	♀ Rises	Cl. fast.
5	37	6 24	3 M 36	6 A 23	2 M 47	10 A 2	4 M 53	4	41
5	2	6 34	3 19	Sets	2 35	10 18	4 47	3	9
5	17	6 44	3 2	5 M 14	2 24	10 34	4 40	1	41
5	8	6 53	2 44	4 56	2 14	10 51	4 34	0	19
4	58	7 3	2 27	4 37	2 11	6	4 27	Slow.	
4	40	7 12	2 8	4 18	1 40	11 18	4 21	2	0

MAY hath xxxi Days.

M ☉ Dec
D North.

First Quarter the 7 Day, 6 min. past Noon.
Full Moon the 14th, 46 min. after 9 Morn.
Last Quarter the 21st, 23 min. past 1 Morning.
New Moon the 28th, 58 min. aft. 11 at Night.

14	27
15	57
17	21
18	37
19	46
20	46

1 S	St. Ph. & Jac. Ap. & M. Toms. <i>Wirk-</i>
2 C	2 Sunday after Easter. [<i>worth</i>]
3 M	From Easter in 5 Days, 1. Ret. <i>Lancast.</i>
4 Tu	<i>Amptbill</i> , Bedf. <i>Bewdley</i> , Worc. <i>Ipsw.</i>
5 W	Term begins. <i>Monmouth</i> , <i>Boston</i> , Linc.
6 Th	<i>Abingdon</i> , Berks. <i>Kendal</i> , Westm.
7 F	<i>Bash</i> , Som. <i>Dunmow</i> , Eff. <i>Leek</i> , Staff.
8 S	<i>Philips Norton</i> , Som.
9 C	3 Sunday after Easter.
10 M	From Easter in three Weeks, 2d Ret.
11 Tu	<i>Leicester</i> , <i>Dunstable</i> , Bedf. <i>Crediton</i> , Dev.
12 W	Old May Day. <i>Penryn</i> , Cornwall.
13 Th	<i>Tiddefwel</i> , Derb. <i>Crouch</i> , Eff. <i>Bala</i> , Meri.
14 F	<i>Wells</i> , Som. <i>Denbigh</i> , <i>Newark</i> , Notting.
15 S	<i>Bakewell</i> , Derb. <i>Chatham</i> , Kent.
16 C	4 Sunday after Easter.
17 M	From Easter in 1 Month, 3 Ret. <i>Ashford</i> .
18 Tu	<i>Hatebury</i> , Bucks. <i>Thunderly</i> , Essex.
19 W	<i>Hereford</i> , <i>Rocheſter</i> , Kent. <i>Stratton</i> , Corn.
20 Th	<i>Galgarth</i> , Breckn. <i>Wickham</i> , Hants.
21 F	<i>Ashburn</i> , Derb. <i>St. Tiddy</i> , Cornw.
22 S	<i>Abbots Bromley</i> , Staff. <i>Greenſtreet</i> , Eff.
23 C	5 Sunday after Eaſt. Rogat. Sunday.
24 M	From Eaſt. in 5 Weeks, 4 Ret. P. F. W. b.
25 Tu	<i>Dagenham</i> , Eff. <i>Malmſbury</i> , Wilts.
26 W	Rogation Week. <i>Perthaethy</i> , Angleſea.
27 Th	Holy Thursday, CHRIST'S Aſcenſion.
28 F	On the Morrow of the Aſcen. 5 Return
29 S	K. CHAR. II. Nat. and Ret. <i>Kanymyneck</i> .
30 C	Exaudi. 6 Sunday aft. Eaſter.
31 M	Term Ends. <i>Rocheſter</i> . <i>Workſop</i> , Nott.

9 A	27	1 A	42
10	23	2	29
11	12	3	16
11	58	4	2
Morn.		4	51
0	39	5	40
1	13	6	30
1	46	7	20
2	15	8	5
2	40	9	1
3	8	9	57
3	35	10	52
4	5	11	47
Rises		Morn.	
9 A	11	0	49
10	19	1	4
11	17	2	41
Morn.		3	4
0	4	4	4
0	44	5	3
1	16	6	2
1	43	7	1
2	7	7	5
2	31	8	3
2	53	9	2
3	17	10	1
3	44	10	5
Sets		11	3
8 A	16	0	A 2
9	9	1	1
9	56	2	

M	D	☉ Rises	☉ Sets	☿ Rises	☿ Sets	♂ Sets	♀ Sets	♂ Rif.	Cl. flow
1	4 ^h	40	7 21	1 M 50	3 M 58	1 M 37	11 A 29	4 M 15	2' 4
6	4	31	7 30	1 34	3 38	1 25	11 36	4 10	3 2
11	4	23	7 38	1 12	3 17	1 12	11 42	4 7	3 5
16	4	16	7 45	1 52	2 57	0 59	11 44	Sets	4
21	4	8	7 53	0 32	2 37	0 45	11 44	8 A 36	3 5
26	4	1	7 59	0 12	2 16	0 30	11 41	9 14	3 4

JUNE hath xxx Days.

M D Dec' North

First Quarter the 6 Day, 44 m. bef. 1 in the Morn.

Full Moon the 12th, 36 min. past 4 Afternoon.

Last Quarter the 19th, 20 min. past Noon.

New Moon the 27th, 53 min. past 2 Afternoon.

1	21	47
6	22	27
11	23	18
16	23	23
21	23	25

1	Tu	Nicom. Rom. Pr. & M. <i>Ruthin</i> . Denb.	10	A	38	2	A	47
2	W	<i>Daventry</i> , Northam. <i>Market-Few</i> , Corn.	11		14	3		37
3	Th	<i>Harsley Green</i> , Lanc. <i>Kerby-Steph</i> . West.	11		47	4		26
4	F	<i>St. Toffels</i> , Cornw.	Morn.			5		15
5	S	Bonit. B. of Mentz, M. <i>Folkingham</i> . East.	0		16	6		1
6	C	Whit fund. Desc. of the Holy Ghost.	0		43	6		51
7	M	Whit -monday. <i>Southwell</i> , Nott.	1		7	7		42
8	Tu	Whit -Tuesday. <i>Newark upon Trent</i> .	1		33	8		33
9	W	Ember -Week. <i>Lenton</i> , near Notting.	2		0	9		27
10	Th	<i>Bingham</i> , Nott. <i>Cranbrook</i> , Kent.	2		32	10		25
11	F	St. BARNABAS & M. <i>Amesbury</i> Wilts.	3		8	11		25
12	S	<i>Bartlow</i> , Eff. <i>Hadlow</i> , K. <i>Haverford West</i> .	D Rises				Morn.	
13	C	Trinity Sunday.	9	A	0	0		25
14	M	On the Morrow of the H. Trin. 1 Ret.	9		53	1		28
15	Tu	<i>Ryſton</i> , Somersetshire.	10		37	2		26
16	W	<i>Wrexham</i> , Denb. <i>Milborn Port</i> , Som.	11		12	3		24
17	Th	<i>S. Alban</i> , M. <i>Bradford</i> , Wiltshire.	11		43	4		18
18	F	Term begins.	Morn.			5		8
19	S	☉ in ☿ 20 d. 14 h. 56 min.	0		8	5		55
20	C	1 Sunday after Trinity.	0		31	6		41
21	M	In 8 Days of H. Trin. 2 Ret.	0		54	7		23
22	Tu	K. GEO. II. Inaug. <i>Appledore</i> , Kent.	1		18	8		4
23	W	<i>Armington</i> , Dev. <i>Folkingham</i> , Linc. East.	1		42	8		45
24	Th	Nativ. of S. JOHN Bap. <i>Barnwell</i> , Cam.	2		10	9		31
25	F		2		41	10		21
26	S	K. GEO. II. Proc. 1727. <i>Chapel-Silvas</i> .	3		16	11		4
27	C	2 Sunday after Trinity.	D Sets					49
28	M	From the D. of H. Tr. 15. D. 3. Ret. Fast.	8	A	32	A.		
29	Tu	St. PETER Ap. & M. <i>Abletſbury</i> , Dorſ.	9		11	1		28
30	W	<i>Bridgenorth</i> , Shropshire.	9		45	2		16

1 D	☉ Rise.	☉ Sets	☿ Rises	☿ Sets	♂ Sets	♀ Sets	♂ Sets	♀ Sets	Cl. flow
1	3h 55	8h 5	11A 43	1M 52	0M 13	11A 34	9A 47	2' 53	
6	3 50	8 10	11 22	1 31	11A 56	11 26	10 3	2 17	
11	3 47	8 13	11 1	1 10	11 42	11 15	10 8	1 25	
6	3 4	8 15	10 41	0 49	11 26	11 2	10 3	0 25	
1	3 4	8 17	10 20	0 29	11 10	10 49	9 51	Fast.	
6	3 44	8 16	9 58	0 9	10 54	10 43	9 31	1 43	

JULY hath xxxi Days.

M ☉ Dec
J. North

First Quarter the 5 Day. 14 min. past 9 Morn.

Full Moon the 11th, 23 min. past 11 at Night

Last Quarter the 19th, 54 min. past 1 Morn.

New Moon the 27th, 10 min. after 5 Morn.

1^h 23^o 14^h
6^h 22^o 5^h
11^h 22^o 26^h
16^h 21^o 45^h
21^h 20^o 55^h
27^h 19^o 57^h

1	Th	Workop, Nott. Hith, Kent.	10 A 14	3 A 7
2	F	Visit of the B.V.M. Hereford. Brecknock.	10 41	3 53
3	S	Shrewsbury. Hadderstone, Hunt.	11 6	4 42
4	C	3 Sunday after Trinity.	11 32	5 33
5	M	Old Midd. D. From D.H.T. 3 Weeks.	11 57	6 22
6	Tu	Penryn, Cornw. 7 Jno. Reyd. [4 Rec.	Morn.	7 13
7	W	Chs. a Bethlet. Trinity Term ends.	0 24	8 7
8	Th	Folkestone, Kent. Machynleth.	0 59	9 4
9	F	Bromley, Devonth.	1 38	10 2
10	S	Ailsford, Dorset. Peter's. Mt. Sorrel, Leic.	2 24	11 3
11	C	4 Sunday after Trinity.	2 Rises	Morn.
12	M	Canterbury. Kent. Carshalton, Surry.	8 A 23	0 3
13	Tu	Congleton, Chesh. Huntingdon.	9 3	1 4
14	W	Days shortened 22 Minutes.	9 37	2 1
15	Th	Swithun, B. of Winchester.	10 5	2 53
16	F	Winchester. Hampsh. Polstead, Suff.	10 31	3 42
17	S	Belt, Bieckn. Lanibishew, Denb. Leek, St.	10 55	4 32
18	C	5 Sunday after Trinity.	11 18	5 5
19	M	Kenninghall, Norfolk.	11 42	5 45
20	Tu	Marg. V. & M. Helfstone, Cornwall.	Morn.	6 40
21	W	Alfreton, Derb. Szaflham, Norfolk.	0 9	7 20
22	Th	S. Mary Magdalene. Fr. CA. MAT. bo.	0 39	8 12
23	F	Honiton, Dev. Daventry. Mattensley, H.	1 13	8 52
24	S	Faringham, Kent. Fall	1 52	9 44
25	C	6 S. after Trin. St. JAMES Ap. & M.	2 39	10 33
26	M	Derby. Bristol. Tamworth. Bedwin.	3 31	11 22
27	Tu	Headon. Yorksh. Fortdown, Hants.	2 Sets	0 A 10
28	W	Emlin, Worcest. Fairford, Gloucest.	8 A 16	1 2
29	Th	Day 15 hours and half long.	8 44	1 49
30	F	Caerleon, Monm. Linton, Camb.	9 11	2 38
31	S	Dog Days begin! Bowling, Harff.	0 25	3 26

M	D	☉ Rises	☉ Sets	☿ Rises	♂ Sets	♀ Sets	♂ Sets	♀ Sets	Cr. fall.
1	3 ^h	46 ^o 8	15 9 A	37	11 A 44	10 A 38	10 A 15	9 A 7	2 58
6	3	48 8	12 9	15	11 24	10 23	9 58	8 37	3 42
11	3	51 8	9 8	54	11 5	10 8	9 37	8 44	3 31
16	3	56 8	4 8	34	10 45	9 53	9 15	Rises	5 12
21	4	17 59	8 14	10	10 26	9 38	8 52	3 M	55 41
26	4	8 7	52 7	53	9 7	9 23	8 27	13 21	5 56

AUGUST hath xxxi Days.

M O Dec.
N North

First Quarter 3 Day, 14 min. past 3 Afternoon.
Full Moon the 10th, 26 min. past 7 Morn.
Last Quarter the 17th, 2 min. before 6 Afternoon.
New Moon the 25th, 40 min. past 6 Afternoon.

1 13° 36'
6 17 20
11 15 57
16 14 27
21 12 52
26 11 0

1	C	7 Sunday after Trin. Lam Day.	10	A	0	4	A	14
2	M	Winchester, Hampsh. Northwich, Chesh.	10	28	5			
3	Tu	Carnarvon, Daventry, Northam & Druth.	10	58	5	52		
4	W	Epsom, Surry Ravenslas, Cumb. Thirsk.	11	33	6	46		
5	Th	Doncaster, Yorksh. Stamford, Linc.	Morn.		7	42		
6	F	Transfig. of our Lord. Paddington, Mid.	0	17	8	4		
7	S	Name of Jesus. Boston, Linc. Falmouth.	1	7	9	42		
8	C	8 Sunday after Trinity.	2	8	10	43		
9	M	Llanwrst, Denb. Shirkn, Middlesex.	3	16	11	45		
10	Tu	S. Laur. Flint. Rugby, Warw. Thaxted Ess.	D Rises		Morn.			
11	W	Newborough, Anglesca. Allchurch, Her.	8	A	5	0	42	
12	Th	Old Lammass Day. Danstale, Bedf.	8	32	1	34		
13	F	Northampton. Stew, Suffolk.	8	58	2	23		
14	S	Days decreased 1 hour and 3 quarters.	9	23	3	12		
15	C	9 Sunday after Trinity.	9	48	3	55		
16	M	Ashburn, Derb. Donnington, Linc.	10	14	4	39		
17	Tu	Bardney, Hampshire,	10	42	5	25		
18	W	Day 14 hours and half long.	11	15	6	11		
19	Th	Dartington, Devonshire.	11	53	6	57		
20	F	Doncaster, Yorkshire (the 21st.)	Morn.		7	44		
21	S	Arundel, Suff. Horncastle, Linc.	0	36	8	33		
22	C	10 Sunday after Trinity.	1	26	9	22		
23	M	Belford, Northum. Dinton, Oxf. Fast.	2	22	10	5		
24	Tu	St. BARTHOL. Ap. & M. Monmouth.	3	25	11	00		
25	W	☉ Eclipsed, invisible. Mirkerton, Som.	D Sets		11	49		
26	Th	Carlisle, Cumb. Huntingdon.	7	A	19	0A	39	
27	F	Coventry, Warw. Gifsbrough, Yorksh.	7	46	1	27		
28	S	S. Au. B. Ripley, Yorksh.	8	11	2	14		
29	C	11 Sunday after Trinity.	8	38	3	5		
30	M	Barham, Suffolk, for Sheep and Lamb.	9	7	3	54		
31	Tu	Day 13 hours 42 min. long.	40		4	46		

M D	☉ Rises	☉ Sets	☾ Sets	☿ Sets	♂ Sets	♀ Sets	☿ Rises	Cl. fast
1	4	17 7	43	4 M	9 A	45	9 A	4 54"
6	4	24 7	36	3	8	54	7 25	5 35
11	4	37 7	38	3	27 9	9	8 36	5 3
16	4	40 7	19	3	6 52	8	23 Rises	4 16
21	4	49 7	10	2	46 3	35	8 9	3 17
26	4	58 7	12	2	26 8	18	7 56	3 3

SEPTEMBER hath xxx Days.

M D Dec
North.

First Quarter the 1st Day, 13 min. past 9 Night.

Full Moon the 8th, 41 min. past 5 Afternoon.

Last Quarter the 16th, 12 min. after Noon.

New Moon the 24th, 9 min. past 7 Morn.

1 9^o 5
6 7 5
11 5 23
16 1 38
21 South
26 0 30

1	W	Giles, Abbot & Conf. North-moor, Wilts	10	A	20	5	A	42
2	Th	Richmond Road, North.	11	7	6	4		
3	F	brecknock, and five following Days.	Morn.					
4	S	Bartholomew, Lond. Dover, Kent.	0	3	8	3		
5	C	12 Sunday after Trinity.	1	8	9	3		
6	M	Folkingham, Linc. Snaith, Yorksh.	2	19	10	34		
7	Tu	Eunuchus, B. of Orleans.	3	33	11	31		
8	W	Nativ. of the B.V.M. Worksworth, Derb	Rises Morn.					
9	Th	Dog Days end. Bishops-Castle, Sh. opsh.	7	A	5	0	20	
10	F	Days decreased 3 hours and half.	7	30	1	10		
11	S	Tallowdown, Dorsetshire.	7	56	1	56		
12	C	13 Sunday after Trinity. [G'ouc.	8	22	2	41		
13	M	Newton, Lan. Tregony, Corn. Iron Acton	8	50	3	20		
14	Tu	Holy Cross D. Woburn, Bedf. Barsly, K.	9	20	4	11		
15	W	Ember Week.	9	57	4	57		
16	Th	Lutterworth, Leic. Newcastle, Staff.	10	38	5	43		
17	F	Lambert, Bish. & M. Probus. Cornw.	11	24	6	31		
18	S	Southwark. Masbam, Yorksh. Wicks, Eff.	Morn.					
19	C	14 Sunday after Trinity.	0	19	8	7		
20	M	Manchester, Lanc. Giffcrough, Y. Fast.	1	18	8	56		
21	Tu	St. MATTHEW, Ap. Ev. and Mart.	2	22	9	46		
22	W	☉ in ♌ 4 h. 25 Allchurch, Worcest	3	31	10	36		
23	Th	Halkin, Wilts. Paincastle, Radnor.	4	42	11	30		
24	F	Wickware, Glouc. Ledwyn, Glam.	Sets OA 2.					
25	S	Bakewell and Chesterfield, Derb.	6	A	48	1	13	
26	C	15 Sunday after Trin.	7	17	2	3		
27	M	Clapham, Yorksh. Northall, Middlesex.	7	50	2	55		
28	Tu	Gloucester. Tuxford, Nottinghamsh.	8	29	3	46		
29	W	St. MICH. and all Angels Wallingf Be.	9	13	4	45		
30	Th	S Jer. Pr. Conf. & Doct. Wrexham Denb	10	7	5	54		

M.D.	☉ Rites	☉ Sets	h Sets	4 Sets	♂ Sets	♀ Sets	♀ Rites	W. flow.
1	5 ^h 1	6 ^h 49	2 M	27 A	58	7 A	40 3 M	35 0' 22
6	5 10	6 40	1	42 7	42	7 28 3	1 6 55	1 12
11	5 20	6 30	1	22 7	26	7 14 2	55 6 49	2 50
16	5 40	6 20	1	37 9	7 2	2 40	6 41	4 34
21	5 59	6 0	0	45 6	53	6 50 2	30 6 33	6 19
26	6	6	0	27 6	26	6 28 2	2 6 20	8 1

OCTOBER hath xxxi Days.

M	⊙ Decl.
D	North

First Quarter the 1 Day, 2 min. before 3 Morn.

Full Moon the 8th, 39 min. after 6 Morn.

Last Quarter the 16th, 3 quarters past 7 Morn.

New Moon the 23d, 35 min. past 6 at Night.

First Quarter the 30th, 27 min. past 10 Morn.

1	F	Remig. B. of Rheims. <i>Sheffnal</i> , Shrop.	11	A	8	6A	45
2	S	<i>Shrewsbury</i> , Shrop. <i>Dover</i> , K. <i>Reading</i> , B.				Morn.	7 38
3	C	16 Sunday after Trinity.			0 15	8	33
4	M	<i>Penkridge</i> , Staffordshire.			1 27	9	28
5	Tu	<i>Llanvilling</i> , Montg. <i>Lampport</i> Som.			2 41	10	19
6	W	Faith, Virgin and Mart. <i>Hull</i> , York sh.			3 54	11	7
7	Th	<i>Billericay</i> , Essex. <i>Countess Court</i> , Wilts.			5 3	11	55
8	F	<i>Abingdon</i> , Berks. <i>Challock</i> , Kent.			D Rises	Morn.	
9	S	St. Denys Arcop. B. & M. <i>Lancaster</i> .			6 A 31	0	41
10	C	17 Sund. aft. Trin. O'd Mich. Day.			6 59	1	25
11	M	<i>Leicester</i> St. <i>Albans</i> , Hertf. <i>Bedal</i> , York.			7 27	2	10
12	Tu	<i>Banbury</i> , Oxf. <i>Caſtor</i> , Linc. <i>Se'wokes</i> , K.			8 1	2	56
13	W	Transl. of K. Ed. Conf. <i>Devizes</i> , Wilts			8 40	3	42
14	Th	<i>Buttunmoor</i> , Shrop. <i>Workſop</i> , Notting			9 24	4	30
15	F	<i>Falſely</i> , Warwickshire.			10 14	5	20
16	S	<i>Bosworth</i> , Leic. <i>Hay</i> , Brecknock sh.			11 11	6	7
17	C	18 Sunday after Trin. Etheldred V.			Morn.	6	55
18	M	St. LUKE the Evang. <i>Cank</i> , Staff.			0 14	7	49
19	Tu	<i>Oxford</i> . <i>Market Harbro'</i> , Le c.			1 20	8	37
20	W	<i>Aſtborn</i> , Derb. <i>Hereford</i> . <i>Blythe</i> , Nott.			2 28	9	23
21	Th	<i>Gainsborough</i> , Linc. <i>Downes</i> , Cornw.			3 39	10	11
22	F	K. GEO. II crown'd. <i>J. Wells</i> , Som.			4 54	11	4
23	S	<i>Ripley</i> , Derb. <i>Stockport</i> , Chesh.			D Sets	11	58
24	C	19 Sunday after Trinity.			5 A 54	0A	51
25	M	Crispin Mart. <i>Queens Camel</i> , Som.			6 31	1	46
26	Tu	<i>Grantham</i> , Linc. <i>Chepſlow</i> , Monm.			7 13	2	42
27	W	<i>Appletreewick</i> , York sh. Fast.			8 9	3	32
28	Th	St. SIM. & St. JUDE A & M. <i>Bingham</i> .			9 4	4	39
29	F	<i>Newcastle upon Tyne</i> , Wm. Richardson.			10 11	5	40
30	S	<i>Banbury</i> , Oxf. <i>Ely</i> , Cambr. Fast			11 22	6	35
31	C	20 Sund. aft. Trin. <i>Be'per</i> . Derb.			Morn.	7	30

M	D	⊙	Rises	⊙	Sets	h	Sets	4	Sets	♂	Sets	♀	Rises	♀	Sets	Cl.	Flow.				
1	6h	11	5h	48	0	M	9	6	A	20	6	A	26	2	M	18	6	A	14	0	1"
6	6	18	5	41	11	A	57	6	4	6	1	2	16	6	5	11	1				
11	6	28	5	31	11	29	5	48	6	3	2	19	5	57	12	42					
16	6	38	5	21	11	11	5	32	5	51	2	22	5	47	3	54					
21	6	47	5	12	10	52	Rises	5	39	2	29	3	36	14	55						
26	6	57	5	2	10	34	6	M	39	5	28	12	36	23	5	40					

NOVEMBER hath xxx Days.

M Deci.
D South

Full Moon the 6 Day, 18 min. past 10 Night.
Last Quarter the 15th, 4 min. past 3 Morn.
New Moon the 22d, 11 min. after 5 Morn.
First Quarter the 28th, 34 min. past 8 Night.

1 13° 48
6 15 24
11 16 53
16 18 16
21 19 30
26 20 35

1	M	All Saints Day.	0	Set	35	8A	19	
2	Tu	Prs. of ORANGE born. All Souls.	1	M	48	9	10	
3	W	On the Morrow of all Souls.	2		58	9	55	
4	Th	Applethaw, Hants.	4		7	10	30	
5	F	Puritans Conspiracy. Beverley, York.	5		16	11	23	
6	S	Leonard, Confessor. Term begins.	D Rises					Morn.
7	C	21 Sunday after Trinity.	5	A	31	0	0	
8	M	Hertford. Colchester, Ess. Ashby, Leic.	6		2	0	54	
9	Tu	Darlington, Durh. Stamford, Linc.	6		38	1	40	
10	W	K. Geo. II born. Lenton, Nott.	7		20	2	28	
11	Th	St. Martin. Bish. & Conf. Liverpool.	8		8	3	16	
12	F	On the Morrow of Saint Martin.	9		1	4	4	
13	S	Britius, Bish. Huntingdon, Heref.	9		58	4	52	
14	C	22 Sunday after Trinity.	11		2	5	40	
15	M	Machutus, Bish.	Morn.					6
16	Tu	Andover, Hampsh. Launceston, Cornw.	0		8	7	16	
17	W	Hugh, Bish. of Linc. Sheffield, Yorksh.	1		16	8	4	
18	Th	In eight Days of Saint Martin.	2		26	8	53	
19	F	Woodcot, Oxf. Yarm, Yorksh.	3		41	9	42	
20	S	Edmund King & Mart. Lynn, Norf.	4		58	10	35	
21	C	23 Sunday after Trinity.	6		17	11	29	
22	M	Cecilia V. & M. York. Monmouth. Dover.	D Sets					0A
23	Tu	S. Clem. I. B. of R. & M. Hild, Ess. x.	5	A	48	1	25	
24	W	D. y 8 hours 28 min. long.	6		47	2	26	
25	Th	Pr. WIL. HEN. born. Chesterfield, Derb.	7		53	3	27	
26	F	In 15 Days of St. Martin.	9		5	4	25	
27	S	Littlebury, Ess. x.	10		18	5	23	
28	C	Advent Sunday.	11		31	6	15	
29	M	Term Ends, Ashburn, Derb. East.	Morn.					7
30	Tu	St. AND. Ap. Prs. Dow. of WALES b.	0		42	7	49	

M D	☉ Rises	☉ Sets	☿ Sets	♂ Rises & Sets	♀ Rises	♂ Sets	Cl. flow.
1	7 ^h	9 ^h	4 ^h 50	10A 11	5M 23	5A 14	2M 44
6	7	18	4	9 52	9 5	3 2	53
11	7	26	4	33 9	34 5	55 4	57 3
16	7	34	4	25 9	15 5	40 4	47 3
21	7	42	4	18 8	57 5	25 4	37 3
26	7	40	4	11 8	38 5	10 4	23 3

DECEMBER hath xxxi Days.

M ☉ Decl. South.

Full Moon the 6 Day, 20 min. past 4 Afternoon.
 Last Quarter the 14th, 24 min. past 8 at Night.
 New Moon the 21st, half past 3 Afternoon.
 First Quarter the 28th, 3 quarters past 9 Morn.

1	21°	31
6	22	17
11	22	30
16	23	15
21	23	29
26	23	26

1	W	Kotherham, Yorksh. Sutton, Kent. <i>Hithe</i> .	1	M	51	8	A	34
2	Th	Hoxne, Suffolk.	3		0	9		10
3	F	Pennyfont, Somersetshire.	4		7	10		1
4	S	Atherstone, Warw. <i>Thirsk</i> , Yorksh.	5		11	10		44
5	C	2 Sunday in Advent.	6		14	11		30
6	M	Nicol. Bish. of Myra in Lycia.		D	Rises		Morn.	
7	Tu	Days decreased 8 hours 34 min.	5	A	9	0		17
8	W	Concept. of the B. V. M.	5		53	1		4
9	Th	Bradford, Wilts.	6		44	1		51
10	F	Kimbolton, Hunt. Newport, Shropsh.	7		41	2		39
11	S	Rochester, Kent. Preston, Lanc.	8		41	3		26
12	C	3 Sunday in Advent.	9		43	4		14
13	M	Lucy, Virgin & Mart. Amesbury, J. D.	10		49	5		00
14	Tu	Day 7 hours 42 min long.	11		56	5		42
15	W	Ember Week		Morn.	6	30		
16	Th	O Sapientia.	1		7	7		19
17	F	Exeter, Devon. Grantham, Linc.	2		20	8		8
18	S	Spalding, Linc.	3		37	9		00
19	C	4 Sunday in Advent.	4		53	9		56
20	M	☉ in ♍ 19 h. 58 min.	6		12	10		53
21	Tu	St. Thomas Ap. & M. Penryn, Corn.		D	Sets	11		56
22	W	Newport Kears, Montg.	5	A	16	0	A	57
23	Th	Greatest dec. of D. at North 9 h. 25 m.	6		27	1		39
24	F	at LONDON 8 hours 50 min. Fast.	7		44	2		58
25	S	CHRISTMAS-DAY.	9		1	3		53
26	C	1 Sund. aft. Christm. St. Steph. 1st M.	10		14	4		46
27	M	St. John. Ap. & Ev.	11		26	5		35
28	Tu	Innocents Day.		Morn.	6	20		
29	W	Lockhill, Som.	0		37	7		3
30	Th	Maiden Bradley, Wilts.	1		44	7		46
31	F	Silvester Bish. of Rome.	2		48	8		30

☉ Rises	☉ Sets	☿ Sets	♂ Rises	♂ Rises	♀ Sets	♀ Rises	☾ Rises	☾ Rises
7h 54'	4h 6'	8 A 10	4h 54'	4 A 11	3 M 43	6 M 8	11	0
8	4	0 8	4 38	4	23	55	6	25
8	43	56 7	4 22	3	54	6	49	16
8	63	54 7	4 5	Rises	4	17	7	55
8	83	52 7	3 48	8 M 6	4	28	7	16
8	53	55 6	3 30	8	14	39	7	2

A TABLE of all the **KINGS** and **QUEENS** of *England* since the Conquest.

The Year of the Birth of each King and Queen; also the Year, Month, and Day, whereon they began to reign: beginning the Year the first Day of January, 1756.				The Length of each Reign.			The Years expired since each Reign be- gan and ended.	
Names.	Born.	Began to Reign.	Y.	M.	D.	Reg.	End	
William Conq.	1027	1066 October 14	20	10	26	690	669	
William Rufus	1057	1087 Septem. 9	12	10	24	669	656	
Henry I.	1058	1100 August 23	5	4	0	656	621	
Stephen	1105	1135 Decem. 1	18	10	24	621	602	
Henry II.	1134	1154 October 25	34	8	11	602	567	
Richard I.	1156	1189 July 6	9	9	0	567	557	
John	1166	1199 April 6	17	6	13	557	540	
Henry III.	1207	1216 October 19	56	1	0	540	484	
Edward I.	1239	1272 Novem. 16	34	7	21	484	449	
Edward II.	1284	1307 July 7	19	6	13	449	429	
Edward III.	1312	1327 January 20	50	5	1	429	379	
Richard II.	1366	1377 June 21	22	3	8	379	357	
Henry IV.	1367	1399 Septem. 29	13	5	21	357	343	
Henry V.	1389	1413 March 20	9	5	11	343	333	
Henry VI.	1421	1422 August 31	38	6	4	334	294	
Edward IV.	1442	1461 March 4	22	1	5	295	273	
Edward V.	1471	1483 April 9	0	2	13	273	273	
Richard III.	1443	1483 June 22	2	2	0	273	271	
Henry VII.	1457	1485 August 22	23	8	0	261	247	
Henry VIII.	1492	1509 April 22	37	9	6	247	209	
Edward VI.	1537	1547 January 28	6	5	8	209	209	
Mary I.	1516	1553 July 6	5	4	11	203	198	
Elizabeth	1533	1558 Novem. 17	14	4	7	198	153	
James I.	1566	1603 March 24	22	0	3	153	13	
Charles I.	1600	1625 March 27	23	10	3	131	10	
Charles II.	1630	1649 January 30	36	0	7	107	7	
James II.	1633	1685 February 6	4	0	7	71	6	
{ William III.	1662	1689 Feb. 13	5	10	15	67	6	
{ Mary II.	1650					67	5	
Anne	1665	1702 March 8	12	4	24	54	4	
George I.	1660	1714 August 1	12	10	10	42	2	
George II.	1683	1727 June 11	whom God preserve.					

A Compendious TABLE of INTEREST,
 shewing the Interest of any Sum of Money, from a Million
 to a Pound; for any Number of Days, at any Rate of
 Interest.

No.	l.	s.	d.	q.	No.	l.	s.	d.	q.
000000—	2739	14	6	0,99	1000—	2	14	9	2,14
900000—	2465	15	0	3,29	900—	2	9	3	3,12
800000—	2191	15	7	1,59	800—	2	3	10	0,11
700000—	1917	16	1	3,89	700—	1	18	4	1,10
600000—	1643	16	8	2,19	600—	1	12	10	2,80
500000—	1369	17	3	0,49	500—	1	7	5	3,70
400000—	1095	17	9	2,79	400—	1	1	11	0,50
300000—	821	18	4	1,09	300—	0	16	5	1,40
200000—	547	18	10	3,40	200—	0	10	11	2,30
100000—	273	19	5	1,70	100—	0	5	5	3,01
90000—	246	11	6	0,32	90—	0	4	11	0,71
80000—	219	3	6	0,96	80—	0	4	4	2,41
70000—	191	15	7	1,59	70—	0	3	10	0,11
60000—	164	7	8	0,22	60—	0	3	3	1,81
50000—	136	19	8	2,85	50—	0	2	8	3,51
40000—	109	11	9	1,48	40—	0	2	2	1,21
30000—	84	3	10	0,11	30—	0	1	7	0,90
20000—	54	15	10	2,74	20—	0	1	1	0,60
10000—	27	7	11	1,37	10—	0	0	6	2,30
9000—	24	13	1	3,23	9—	0	0	5	3,67
8000—	21	18	4	1,10	8—	0	0	5	1,40
7000—	19	3	6	2,96	7—	0	0	4	2,41
6000—	16	8	9	0,82	6—	0	0	3	3,76
5000—	13	13	11	2,58	5—	0	0	3	1,15
4000—	10	19	2	0,55	4—	0	0	2	2,52
3000—	8	4	4	2,41	3—	0	0	1	3,80
2000—	5	9	7	0,27	2—	0	0	1	1,26
1000—	2	14	9	2,14	1—	0	0	0	2,63

R U L E.

Multiply the Sum by the Number of Days; and that Product by the
 Rate per Cent. Then cut off the two last Figures to the Right Hand,
 and the rest you must find in the Table.

Example, What is the Interest of 100 l. for 365 Days at 5 per Cent.

No. of Days 365

Then in the Table

multiply by 100

against 100 is 2 14 9 2,14

Product 36500

800 2 3 10 0,11

multiply by 5 Rate p. Cent.

20 0 1 10,60

1825100

5 9 0 3 1,15

Ans. 5 0 00,00

THIS Year there will be only two Eclipses, both of the Sun, and invisible; of which Mr. *Lionel Charlton*, and other of our *Contributors*, have sent us the Times as follows, *viz.*

Monday, March 1, at 2 in the Morning.

Wednesday, Aug. 25, at 7 in the Afternoon.

The said *Lionel Charlton* also observes, that there will be a very remarkable Transit of the Planet *Mercury* over the Sun's Disk, on the 7th of *November* in the Morning; and says, that the Inhabitants of *Asia*, particularly of the *East Indies* and *China*, may (by the Assistance of *Telescopes*) see *Mercury* approach within less than a Minute of the Sun's Centre; a Phænomenon, which will not happen again for several Centuries to come.

We should be very glad to find all our *CONTRIBUTORS* so honest, as to send us their own Performances; and not to steal *ÆNIGMAS*, or any other *SUBJECTS* whatsoever. Can it be supposed that the *AUTHORS* have read every thing that has been published? Or, if they had; Can it be expected, that they remember all that they read? We looked upon the second *Ænigma* last Year to be a very good one; and had no Suspicion of its being stolen from the *LADIES DIARY* in 1727; therefore hope we shall not be found deserving of publick Censure on that Account; for whoever shall be found guilty of such Practices for the future, we shall not fail exposing them to the World.

We gave a *Hint*, much to the same Purpose in the last Year's *DIARY* (Page 34) and further desired (as we do still) that all our *CONTRIBUTORS*, in their Solutions to the Mathematical Questions, will send their *Schemes* as perfectly drawn as possible; and also of a *Size* proper for the *DIARY*: and likewise to bring out all their Equations in Numbers, in order to facilitate the Labour of the *AUTHORS*, in collecting and compiling the Work, &c.

We return Thanks to *English Tom*, for what he favoured us with the last Year; but, as he must be sensible, that *Solutions* are always expected, along with whatever is *proposed* by our *CONTRIBUTORS*; he (and all others,) may reasonably expect that we shall (with Pleasure) make it our Endeavour to oblige them as far as we have Room, &c. but desire to acquaint them, that they must not expect to have any thing published but what they send Solutions to.

N. B. Mr. *Randle's* Question was published in the *Universal Magazine* for May last.

B

Answers

The GENT. Diary; or Math. Repository. 19

given $\odot = 11^{\circ} 22'$; and the $\angle L \odot D = 0^{\circ}$; so find $\odot L = 11^{\circ} 23' =$ the $\odot$'s Longitude from $\odot$: And $D L = 0^{\circ} 59'$, its Latitude.

Mr. Sam. Bamfield, of Honiton in Devonshire, sends us the following Solution to the same Question; thus:

It is extremely obvious, that the Moon's North, or ascending Node must be in *Cancer*, because that Point of the *Ecliptick* is the farthest possible Distance from the Equinoctial; therefore the $\odot$'s Node is distant from the *N. Pole* $66^{\circ} 31' = \odot P$ (See Fig. 2.) Let $\odot D \psi$, represent the Moon's Orbit (at the required Time) intersecting the *Ecliptick* at $\odot$ and ψ ; then will the $\angle \psi \odot D = 5^{\circ}$. . . the $\angle D \odot P = 85^{\circ}$. Then, suppose $\odot P$ to be a Meridian crossing the $\odot$'s Orbit at right Angles (which of Consequence must be the shortest Line possible) then, in the rectangled spherical Triangle, $\odot P D$; I find $D P = 66^{\circ} 1' 12' =$ the Moon's distance from the *N. Pole*; and $\odot D = 11^{\circ} 20' 36'$. And thence I find $L \odot = 11^{\circ} 18' 5'' =$ her Longitude from *Cancer*: the Longitude from *Aries* $= 101^{\circ} 18' 5''$. And, lastly I find $L D = 0^{\circ} 58' 56''$, her Latitude; which was required.

We received several good Answers from our CONTRIBUTORS (See the Catalogue.)

2 Question (142) by Mr William Bevil of Harpswell.

Let $x =$ Abscissa, $y =$ Ordinate, $p = 3,1416$; then $\frac{p}{6a} \times \frac{a^2 + y^2}{2} - \frac{p a^2}{6} =$ the convex Surface of the Conoid; also $\frac{p x y^2}{2} = s$, and $a x = y^2$ the Equation of the Curve by Expunge $-y^2$, we have $\frac{p}{6} \times \frac{a^2 + 4 a x}{a} - \frac{p a^2}{6} =$ a Minimum; and $\frac{p x x^2}{2} = s$. These two Equations in Fluxions will be

$$\frac{3 a^2 + 6 a^2 x + 6 a x x^2 + 4 a^2 x^2 - \frac{1}{2} x a^2 + \frac{1}{2} x^2}{a^2} - 2 a^2 = 0,$$

and $\dot{x} = \frac{-ax}{2a}$; which being put for $\dot{x}$ we get $3 a^2 a - 3 a a x + 6 a a x x + a^2 + 4 a x^2 - \frac{1}{2} x a^2 + 4 a x^2 - 2 a^2 = 0$. Or $3 a^2 + 3 a x x + a^2 + 4 a x^2 - \frac{1}{2} a^2 + 4 a x^2 - 2 a^2 = 0$. Therefore $12 a^2 - 15 a x + 4 x^2 = 0$: But since $a = \frac{2s}{p x^2}$, we have $48 s^2 - 30 s p x^3 + 4 p^2 x^6 = 0$.

$$\therefore x^3 = \frac{15s}{4p} \pm \frac{s}{4p} \sqrt{33}. \text{ Or } x^3 = \frac{s}{4p} \times 15 \pm \sqrt{33}.$$

Whence $x = ,903084\sqrt{s}$. Hence $y = ,839605\sqrt{s}$. Q. E. D.

The same answered by Mr. Tho. Garrard.

Put $p = 3,14159$, the Circumference of a Circle whose Diameter is Unity; d , the convex Superficies; and s , the Solidity of the common *parabolic Conoid*; x any variable Abscissa, y its correspondent Semi-ordinate; and a , the Perimeter of its generating Parabola. Then, by the Nature of the Curve, $ax = yy \therefore s = pxyy = paxx \therefore s = \frac{1}{2} paxa = \frac{p}{2} \frac{a^2}{x}$; Again $d = 2py \sqrt{xx + yy} = \frac{2p}{a} \sqrt{aa + 4yy}$, whose Fluent corrected is $D = \frac{p}{6a} \sqrt{aa + 4yy}^{\frac{3}{2}} - \frac{paa}{6}$;

$\therefore \frac{1}{2} \sqrt{aa + 4yy}^{\frac{3}{2}} - aa$, is a *Minimum*: or writing v^6 for a , and c for $\sqrt{\frac{s}{2p}} = \frac{\sqrt{yy}}{\sqrt{a}}$, we have $v^6 - \frac{8c^{\frac{3}{2}}}{v} - v^{\frac{12}{5}}$

a *Minimum*, which *Fluxed* and *Reduced*, gives $v^{\frac{12}{5}} - \frac{5c}{2}$

$v^{\frac{12}{5}} = -\frac{5}{2}cc$; and restoring the Values of v^6 and c , we have

$a^{\frac{3}{2}} = \frac{1}{2} \sqrt{\frac{s}{2p}} \times a^{\frac{3}{2}} = -\frac{8s}{12p}$; and completing the Square, &c. $a^{\frac{3}{2}} = \frac{1}{4} \sqrt{\frac{s}{2p}} + \sqrt{\frac{11s}{96p}}$, = , 68965704,

when $s =$, Unity; whence $a = 0,7805884$, $x = 0,9030858$, and $y = 0,8396060$. Now, because the Solidity of all similar Solids, are as the Cubes of their like Sides; it is evident (from the above) that when the Superficies of the *parabolic Conoid* is a *Minimum*, the *Perimeter*, *Abscissa*, and *Semi Ordinate* of its generating Parabola, will always be = the Cube Root of the Conoid's Solidity, multiplied by those Numbers respectively.

Mr. Zach. Gaskell answers it as follows.

First, we have by the Doctrine of FLUXIONS (putting $a =$ Param. and $c = 3,141592$, &c.) $\frac{c}{ba} \times \sqrt{aa + 4y}^{\frac{3}{2}} - \frac{caa}{b} =$ to the convex Surface; and the Fluxion of the Solidity $= \frac{2cy^3}{a}$, whose Fluent $\frac{cy^4}{2a} = s$; whence $ba = \frac{3cy^4}{s}$; and $aa = \frac{c^2y^2}{4s^2}$. Put these respectively for their Values in the above Expression, and after due Regulation it will

will become, $\frac{1}{y^4} \times \frac{c^2 y^6 + 4yy}{4ss + 4yy} \Big|^\frac{1}{2} - \frac{c^2 y^8}{8s^2}$; which is to be a *Minimum*: This in *Fluxions* and reduced, gives $\frac{5s^2}{c^2} - y^2$
 $y^2 = \frac{b4s^4}{12c^4}$ sol'd $y^2 = \frac{3.4574271077}{c^2} s^2$; whence $y =$
 $\sqrt[4]{\frac{3.4574271077}{c^2}} \times \sqrt[4]{s} = 0.83960602 s^\frac{1}{2}$: And from the
 Equation $\frac{cyyx}{2} = 5, x = c \times \frac{2s^\frac{1}{2}}{.83960602} = 90398582 s^\frac{1}{2}$
 as were insisted on.

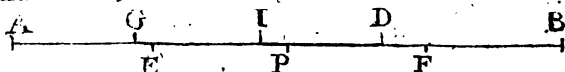
Mr. Sam. Bamfield's Solution to the same.

Put $a =$ Parameter, $p = 3,1416$, and $s =$ the Conoid.
 Solidity ($= 1$) per *Simpson*, p. 131. $\frac{aa + 4yy}{a} \Big|^\frac{1}{2} - a^3 \times \frac{p}{3} =$
 the convex Surface; per Property of the Figure, $4yy^2 =$
 $4ax = 4a \sqrt{\frac{2s}{pa}} = \sqrt{\frac{32sa}{p}}$; which make $= \pi a^\frac{1}{2}$, and
 $x^2 = a$; then, — the Expression for the *Minimum* will stand
 thus, $\frac{x^4 + \pi x^2}{x^2} \Big|^\frac{1}{2} - x^2 \left(\frac{p}{3}\right)$ being constant. In Fluxions
 $6x^3 \dot{x} + \frac{1}{2} \pi x^2 \dot{x} \times \sqrt{x^4 + \pi x^2} - 2x \dot{x} \times \sqrt{x^4 + \pi x^2} -$
 $4x^7 \dot{x} = 0$; Reduced, — $3x^6 + \frac{15}{16} \pi x^3 - \frac{1}{16} \pi \pi = 0$. Per
 Restitution — $3a^3 + \frac{15}{16} \sqrt{\frac{32s}{p}} a^\frac{3}{2} = \frac{2s}{p}$; which Qua-
 dratic sol'd, $a = .7805786$ accurately; hence the Abscissa
 $= .9030904$, and Semi-ordinate $= .8396029$: Whence
 these Numbers are the general Proportion for the *Axis* and
Semi-ordinate of all such like *Conoids* as are comprized under
 the least Surface possible. In like Manner as a Cone, under the
 least Superficies, hath it's Base to its Altitude, as 1 to $\sqrt{2}$.

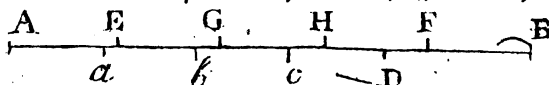
The Proposer Mr. Tho. Moss, answers the third Question,
 by the following *Demonstration*.

First, then, let a right Line AB, be divided in F in the
 Ratio of 1 to 3. Now, we are in this Circumstance, to
 prove that $AF^3 \times FB$ is a *Maximum*, in order to do which;
 let AF be divided into three equal Parts as AE, EP, and PF;

Moreover divide AD (any Distance less than AF) into three equal Parts, as AG, GI, and ID; then, it is plain $AG^3 : AE^3 :: AD^3 : AF^3$. That is, the Cube of $\frac{1}{3}$ of any right Line (or Number) is always in a constant Ratio to the Cube of the whole Line (or Number) $\therefore AG \times GI \times ID$, is in the very same Ratio to AD^3 , as $AE \times EP \times PF$ is to AF^3 ; but the latter $AE \times$



$EP \times PF$, (or AF^3 which is a Multiple of it) multiplied by FB, must be greater than $AG \times GI \times ID$ (or than AD^3 which is the same Multiple of $AG \times GI \times ID$ as AF^3 is of $AE \times EP \times PF$) multiplied by DB; because, it is evident, from *Eu. 2 5*. that, if a right Line be divided into any given Number of Parts, the continual Product of those Parts of the Line, will be the greatest possible, when the said Parts are $=$ to each other. By the very same Method of Reasoning, it may be proved, if BF, be taken for AF, in the Ratio of 1 to 4, that $AF^4 \times FB$, is a Maximum: For let another Point D, be taken, and divide AD into 4 $=$ Parts; *Aa*, *Ab*, *bc*, and *cD*; also



divide AF into four equal Parts; AE, EG, GH, and HF; then it is evident, that $AE^4 : AF^4 :: Aa^4 : AD^4$; that is, $AE \times EG \times GH \times HF$ (or AE^4) is in the same Ratio to Aa^4 , as $Aa \times ab \times bc \times cD$ (Aa^4) is to AD^4 , wheresoever the Point D be taken; provided the Distance AD be divided (as well as the Distance AF) into four equal Parts: but by the above-mentioned Proposition, $AE \times EG \times GH \times HF \times FB$, for $AF^4 \times FB$ which is a Multiple of it) will be a Maximum; From whence it appears, that if a right Line be divided into any given Number of equal Parts, the Product made by one of those Parts, and the Remainder of the Line raised to the Power, whose Exponent is equal to the said given Number of equal Parts, *Minus* one, will be a *Maximum*; whence the Truth of the Proposition is manifest. Q. E. I.

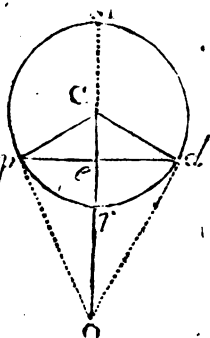
3 Question (143) answer'd by Mr Tho. Garrard.

Let *a*, represent the greater Part; and *b*, the lesser Part; and, let A and B, be put for their Logarithms respectively. And (putting *n* for the Exponent of the greater Part) we have
by

by the Question $nA + B$ a Maximum.—Now let a be augmented, or diminished by the indefinitely small Quantity e , then will $a \pm e$, denote the greater Part, and $b \mp e$ the lesser; and let their Logarithms be represented by $A \pm c$, and $B \mp d$ respectively; Then by the Nature of Logarithms $a : b :: d : c$. But it is evident, that when $nA + B$ is a Maximum, B must increase or decrease, just n times as fast as A decreases or increases; or, $nc = d$, which being writte for d , in the above Analogy, it becomes $a : b :: nc : c$, $\therefore bn = a$, or $a : b :: n : 1$.

4 Question (144) answer'd by Mr. Tho. Garrard.

Let $Mdrp$, represent one of the Balls. c its Centre; o the Position; op and od , Tangents to the Globe; and put $2d$ for it's Diameter, $v = er$ (the verfed Sine) and $z = co$ (the Distance of the Eye from the Centre of the Globe) then will $d\phi$, be as the Surface of the Globe seen by an Eye at o . But (by

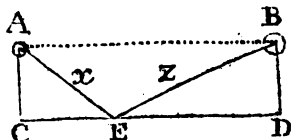


the Property of the Circle) $er \times em$

$$= d^2; \text{ and by 18 E.3. and 8.E.6. } ce \times eo = z^2 - v^2$$

$$\therefore dv = dd - \frac{d^2}{z} \text{ which will always be}$$

as the Superficies of the Globe seen at o , let oc , and cd , be what they will: Which being promised, put $n = 7$ Feet, the Diameter of the lesser Ball A, $c = 9$ Feet, the Diameter of the greater Ball B, and $d = 300$ Feet, $= AB = CD$ their Distance from each other; and $a = AC = BD = 20$ Feet; E the Position of the Eye; $AE = x$, $BE = z$ and $DE = y$; then by the Question and what



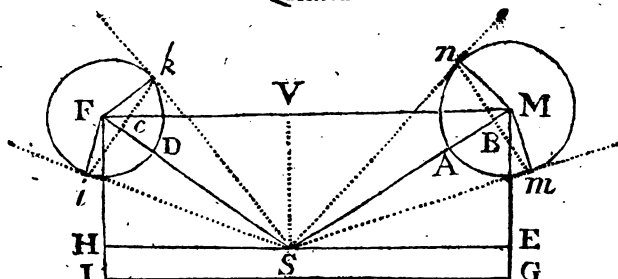
has been promised, we have $cc = \frac{c^3}{z} + nn = \frac{n^3}{x}$, or, rather $\frac{c^3}{z} = \frac{n^3}{x}$ a Maximum $\therefore c^3 \dot{x}xx = n^3 \dot{x}zx$; and by writ-

$$\text{ing } aa + dd - 2dy + yy \text{ for } xx, aa + yy \text{ for } zx$$

$$\sqrt{aa + dd - 2dy + yy} \text{ for } \dot{x}, \text{ and } \sqrt{aa + yy} \text{ for } \dot{z};$$

and dividing the whole by y we have $c^3 y \times aa + dd - 2dy + yy)^{\frac{3}{2}}$
 $= n^3 y - n^3 d \times aa + yy)^{\frac{3}{2}}$, where the Value of y will be found
 $= 178,7282 = ED$; hence $EC = 121,2768$. N.B. From
the general Expressions $c^3 xxz = n^3 xzx$, it appears that
when the Motion of the Eye is in a straight Line between
the two Balls, then $\dot{x} = \dot{z}$ and consequently $c^3 xx = n^3 xz$;
or $c^3 : n^3 :: xz : xx$.

Mr. Will. Bevil, the Proposer's Solution to the fourth
Question.



In the annexed Figure, let F and M represent the two
Balls; then put $a = AM = \frac{2}{2}$, $b = DF = \frac{2}{2}$, $GM - EG =$
 $EM = 20 = c$, $FM = 300 = d$, and $x = HS = FV$, then
 $d - x = ES = MV$, then $\sqrt{c^2 + x^2} = FS = z$, and
 $\sqrt{c^2 + a - x^2} = MS = y$. Then per Sim. Δ 's, $y : a :: a :$
 $\frac{a^2}{y} = BM$, $\frac{ay - a^2}{y} = AB$; again $z : b :: b : \frac{b^2}{z} = FC$;
 $\frac{bx - b^2}{z} = CD$, and $\frac{ay - a^2}{b^2 x - b^2 y^2} \times 2a \times 3,1416 =$ Surface
Ann seen at S $\frac{bx - b^2}{x} \times 2b \times 3,1416 =$ Surface Disk
seen at S. Then $\frac{2b^2 x - 2b^3}{x} \times 3,1416 + \frac{2a^2 y - 2a^3}{y} \times$
 $3,1416 =$ Sum of the Surfaces which must be a Maximum
in Fluxions $\frac{b^2 x x - b^2 x \dot{x} + b^3 \dot{x}}{x^2} + \frac{a^2 y \dot{y} - a^2 y \dot{y} + a^3 \dot{y}}{y^2}$
 $= 0$; or rather $\frac{b^3 \dot{x}}{x^2} + \frac{a^3 \dot{y}}{y^2} = 0$. But $x = \sqrt{c^2 + x^2}$ and $y =$
 $\sqrt{c^2 + d - 9^2}$, then $\dot{x} = \frac{x \dot{x}}{\sqrt{c^2 + x^2}}$ and $\dot{y} = \frac{-d\dot{x} + x\dot{x}}{\sqrt{c^2 + d - x^2}}$
Therefore we have the following Equation, and only one un-
known

known Quantity $\frac{b^3 x \dot{x}}{\sqrt{c^2 + x^2} \times c^2 + x^2} + \frac{-d\dot{x} + x\dot{x} \times a^3}{\sqrt{c^2 + d - x^2} \times c^2 + d - x^2}$
 $= 0$; or $\frac{b^3 x}{\sqrt{c^2 + x^2}^{\frac{3}{2}}} = \frac{d - x \times a^3}{\sqrt{c^2 + d - x^2}^{\frac{3}{2}}}$. But if squared $\sqrt[6]{\frac{b^3 x^2}{c^2 + x^2}} = \sqrt[6]{\frac{d - x \times a^3}{c^2 + d - x^2}}$
 $= \frac{d - x^2 \times a^6}{\sqrt[6]{c^2 + d - x^2}^2}$ which is an Equation of the eighth Power;

whence the Value of $x = 121\ 2625 = SH$.

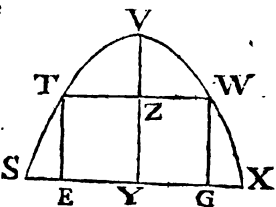
Mr. Sam. Bamfield, Mr. Charles Wildbore, Mr. Tho. Moss, and other Contributors have sent us good Solutions to this Question, but Room will not permit us to publish them all.

(5) Question 145. answer'd by Mr Sam. Bamfield.

Given $SY = 20 = y$; and $SV = 30,55 = z$; per Emerson's Fluxions Page 170. The Arch of the semicubical Parabola is $= \frac{8a}{27} \times 1 + \frac{9y^{\frac{3}{2}}}{4a} - \frac{8a}{27}$; hence

$$1 + \frac{9y^{\frac{3}{2}}}{4a} - 1 = \frac{2yz}{8a}; \text{ which}$$

Equation is when reduced $729y^3 = 729xza - 972yya + 432xaa - 432yaa$; which Quadratic gives, $a = 15,9792$. From whence VY is found $= 22,3906$.



For the greatest Parallelogram, put $b^3 = VY^3$; $c = SY$; $x^3 = ZV^3$; and let $d = VY$; then $d - x^{\frac{3}{2}} = ZY$ per Curve $b^3 : c^3 :: x^3 : \frac{c^3 x^3}{b^3} = TZ^3 \therefore \frac{cx}{b} = TZ$, which x^d by $ZY = \frac{cdx - cx^{\frac{5}{2}}}{b} = \text{Maximum}$. In Fluxions, $c d\dot{x} - \frac{5}{2} c x^{\frac{3}{2}} \dot{x} = 0$. Reduced $\frac{2d}{5} = x^{\frac{3}{2}} = 8,95624 = VZ$: Hence $ZY = 13,43436$; and $TZ = 10,8577$, and the Area of the Parallelogram required $= 291,732$.

The same answer'd by Mr. John Boston of Biggleswade.

The given Equation $p x^3 = y^3$, and $y = 20$ the Semi-ordinate. Then $\sqrt{x^2 + y^2} = y \times \frac{9y}{4p} + 1^{\frac{1}{2}}$, whose Fluent corrected is $\frac{8p}{27} \times \frac{9y}{4p} + 1^{\frac{1}{2}} - \frac{8p}{27} = \frac{61,1}{2} = 30,55$, which Equation resolved, gives $p = 16$; whence $x = \sqrt[3]{\frac{y^3}{p}} = 22,36$.

Let $a = ZV$, $x = TZ$; then $YZ = x - a$: and per Equation of the Curve $p a^2 = x^3$, $p^{\frac{1}{2}} a^2 = x$; then $2 p^{\frac{1}{2}} a^{\frac{3}{2}} = 2 x = TW$; and $2 p^{\frac{1}{2}} a^2 \times x - a = 2 x p^{\frac{1}{2}} a^2 - 2 p^{\frac{1}{2}} a^3 =$

to the Area of the Parallelogram $ETWG = a$ Maximum;
in Fluxions $4x p \frac{1}{3} a - \frac{1}{3} a^2 - \frac{10}{3} p \frac{1}{3} a^2 \dot{a} = 0$. Whence $a =$
 $\frac{2}{3}x = 8,944$; and the Area required is 291,327.

Mr. *Will Kingstone*, of *Bath*, answers the 5th Qu. thus.

Let $y = SY = YX = 20$; $z = 30,55$; $x = YV$; $v =$
 YZ $TE = WG$. Then, by the Property of the Curve
 $a x^2 = y^3 \therefore x = \frac{y^{\frac{3}{2}}}{a^{\frac{1}{2}}}$. Flux'd is $\dot{x} = \frac{y^{\frac{1}{2}} \dot{y}}{a^{\frac{1}{2}}} \therefore \dot{x} = \frac{9}{4a} y \dot{y}$;

which put for $\dot{x}$ in $\sqrt{x^2 + y^2}$ gives $y \sqrt{\frac{1+9y}{4a}} = z$, whose

Fluent is $z = \frac{8a}{27} \times 1 + \frac{9y^{\frac{3}{2}}}{4a}$, which corrected by making

$y = 0$, gives $z = \frac{8a}{27} \times \frac{1+9y^{\frac{3}{2}}}{4a} + \frac{8a}{27}$ therefore

$$\frac{27z+8a}{8a} = 1 + \frac{27z}{8a} = \frac{1+9y^{\frac{3}{2}}}{4a} \therefore 1 + \frac{54z}{8a} + \frac{729z^2}{64a^2}$$

$$= 1 + \frac{27y}{4a} + \frac{243y^2}{16a^2} + \frac{729y^3}{64a^3} \therefore a^2 + \frac{27z^2 - 36y}{16z - 16y}$$

$\times a = \frac{27y^3}{16z - 16y} \square C$, gives

$$a = \frac{3\sqrt{81z^4 - 216z^2y^2 - 48y^4 + 192z^3 - 27y^2 + 36y^3}}{32z - 32y}$$

$= 16$. Whence $x = \frac{y^{\frac{3}{2}}}{\sqrt{a}} = 22,36$, by the Property of the

Curve $a x x - v^2 = TZ^2$; whence also $2v + \frac{1}{2}x x - v^2 =$ the
Area, a Maximum, and in Fluxions is $\frac{6ax^2v - 16axv\dot{v} - 16av^2\dot{v}}{3 \times a \times x - v^{\frac{1}{2}}}$

$= 0$. $\therefore 3x^2 - 8xv + 5v^2 = 0$. $\therefore v^2 - \frac{8xv}{5} = -\frac{3x^2}{5}$;
the $\square C$, gives $v = \frac{3x}{5} = 13,419$, and the Area $= 291,1272$.

The same answer'd by Mr. *Tho. Allen* of *Spalding Lincolnshire*.

Let $STVWX$ be a cubical Parabola, whose Ordinate SX ,
let $2y$ represen; then, by the Doctrine of Fluxions, we shall

have $\frac{8p}{27} \times 1 + \frac{1801^{\frac{1}{2}}}{4p} - \frac{8p}{27} = 30,55$, whence the Parameter
 $p = 16$; and by the Equation of the Curve, the Abscissa YV
(a) is found $= 22,36$.

Now call YZ, x ; $VZ, a - x$; then by the Nature of the
Curve. $p x a - x^{\frac{4}{3}} = ZW = ZT \therefore a^2 x^{\frac{1}{3}} - 2ax^{\frac{4}{3}} + x^{\frac{5}{3}}$
is a Maximum. In Fluxions $3a^2x^{\frac{1}{3}}\dot{x} - 8ax^{\frac{1}{3}}\dot{x} + 5x^{\frac{2}{3}}\dot{x}$

$= 0$. Reduced $x = 13,418 = ZY$. Consequently $ZV = 8,942$; $ED = 10,856$. And the Area of the greatest Parallelogram $= 291,3316$.

Mr. Zach. Gaskill, Mr. Charles Wildlore of Nottingham, Mr. Lionel Charlton, Mr. John Thompson, Mr. Abraham Botbam, Careless Jack, and other ingenious Contributors, sent us Solutions to this Question; but as the above inserted are sufficient, omit the rest.

6 Question (146) answered by the Proposer, *Tabularius*.

Let $8 = a$, $BI = y$, $AB = 2x = \frac{2y^2}{a}$,

by the Equation of the Curve, and Radius $=$

1 ; Then $\frac{2y^2}{a} : 1 :: y : \frac{a}{2y} = \text{Tangent of the}$

Angle $BAI = BIC \therefore \frac{4ay}{4y^2 - a^2} = \text{Tan-$

gent of the $\angle BIR$; and $4 : y :: \frac{4ay}{4y^2 - a^2} :$

$\frac{4ay^2}{4y^2 - a^2} = BR$. Whence, by the Nature

of the Question, we have $\frac{16a^2y^4}{4y^2 - a^2} + y^2 =$

$\frac{a^2 + 4y^2}{4a^4}$; $\therefore \frac{16a^4x^2}{4ax - a^3} + ax = \frac{4ax + a^3}{4a^4}$; by Re-

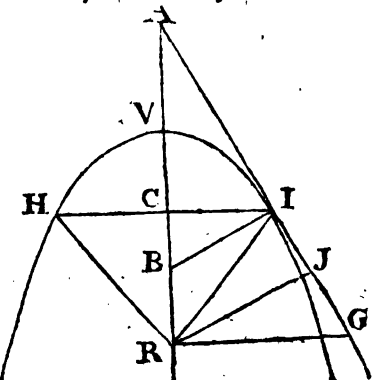
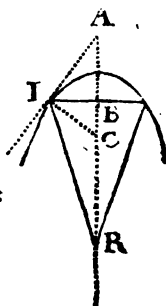
duction $\frac{ax}{16x^2 - 8ax + a^2} = \frac{4x + a}{4a}$; and by a further Re-

duction, $x^3 - \frac{ax^2}{4} - \frac{a^2x}{8} + \frac{a^3}{64} = 0$. In Numbers, $x^3 -$

$2x^2 - 8x + 8 = 0$. From which $x = 3,60388$, and thence $y = 5,36945$; and the $\angle BIC = RIC = 36^\circ 41'$; which determines the Points I and R, required.

The same answer'd by Mr Zach. Gaskill.

In the Figure let R be the Point of Intersection, I the Point of Incidence, AG the Tangent or Direction of the Curve at that Point; let RG, and IB be perpendicular to the Axis VR, and the Tangent AG; Then by the Nature of the Figure CB will be equal to $\frac{a}{2} = 4$, and by the Question; RI, is to be equal to the Radius of Curvature at the Point



said Ray of Light. Put the Parameter ($= 8 = 2rn$) $= 2a$; $Vr = x$, and the Sine of the Angle $Pnr = z$ (Radius being $= 1$). Then, first we have, by the Property of the Curve, $Pr (=y) = \sqrt{2ax}$; and per *Simpson's Fluxions*, Vol. I. p. 76.

$$PC (=PK) = \frac{2a + 4x^{\frac{3}{2}}}{2\sqrt{2a}}; \text{ and also } FR (=Cm) = \frac{4x^{\frac{3}{2}}}{\sqrt{2a}}.$$

Moreover the Sine of the Angle PKr will be, truly expressed

$$\text{(because of the equal Radii PC and PK) by } z \times \frac{4x^{\frac{3}{2}} + \sqrt{2ax}}{\sqrt{2a}} \\ (= \frac{4z\sqrt{x^3 + 2ax}\sqrt{x}}{2a\sqrt{x}}) = \frac{2z + az}{a}; \text{ whence by Tri-}$$

$$\text{gonometry } \frac{2zx + az}{a} : \sqrt{2ax} :: 1 : \frac{2a + 4x^{\frac{3}{2}}}{2\sqrt{2a}}; \therefore \sqrt{2ax}$$

$$= \frac{2zx + az}{a} \times \frac{2a + 4x^{\frac{3}{2}}}{2\sqrt{2a}}; \text{ But, by Trigonometry as } z :$$

$$\sqrt{2ax} :: \sqrt{1 - z^2} \text{ (the Cosine of } Pnr) : a \therefore \sqrt{2ax - 2axz^2}$$

$$= az; \text{ or } a^2 z^2 = 2ax - 2axz^2; \therefore x = \frac{a^2 z^2}{2a - 2az^2} =$$

$$\frac{z^2}{2 - 2z^2}; \text{ which being substituted for } x, \text{ in the first Equation, we get } \sqrt{\frac{2a^2 z^2}{2 - 2z^2}} \text{ (or } \frac{az\sqrt{2}}{\sqrt{2 - 2z^2}}) = \frac{2az^3 + a^2 z^3}{2a - 2az^2} \times$$

$$\frac{2a - \frac{4az}{2 - 2z^2}}{2\sqrt{2a}}; \text{ or (by putting } 2 + a = b) \frac{az\sqrt{2}}{\sqrt{2 - 2z^2}} =$$

$$\frac{bz^3}{2 - 2z^2} \times \frac{4a - 8az^2}{2 - 2z^2}; \text{ or } \frac{2az^2 z^2}{2 - 2z^2} = \frac{b^2 z^6}{2 - 2z^2} \times$$

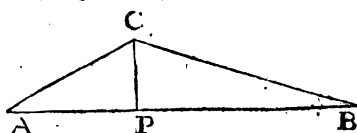
$$\frac{4a - 8az^2}{2 - 2z^2}; \therefore 16a^3 = \frac{b^2 z^4}{2 - 2z^2} \times \frac{2a - 4az^2}{1 - z^2}; \text{ from which}$$

Equation the Value of z (or the Sine of the Angle Pnr) may be found, and Pr and PK , and also the Angle PKR the required Direction of the Ray of Light. Q. E. D.

Mr. Lionel Charlton, Mr. Sam. Bamfield, and other of our ingenious Contributors sent us Solutions to the same.

Quest.

7 Quest. (147) answer'd by Mr *Abr. Botham* of *Watnall*.



Let $AC = a = 80$;

$CB = b = 120$; and

$CP = p$. Then $\sqrt{aa - pp}$

$= AP$; and $\sqrt{bb - pp} =$

BP . And *per* Question

$\sqrt{aa - pp} : \sqrt{bb - pp} :: \sqrt{bb - pp} : \sqrt{aa - pp} +$

$\sqrt{bb - pp} :: bb - pp = aa - pp + \sqrt{aa - pp} \times \sqrt{bb - pp}$

This Equation properly reduced becomes $b^4 - 3bbaa +$

$a^4 = p^4 - aa + bb \times p^2$. The Square completed, and

afterwards extracted $1,118bb - 1,118aa = \frac{aa + bb}{2} - pp$.

Therefore $p = \sqrt{1,618aa - 5,618bb} = 38,157$. $AP =$

$70,31$. $PB = 113,7$ &c. And the Area of the Base of the

Prism $= 3512,161$; which is 1987,48 times greater than the

Area of a Hole whose Diameter is $1\frac{1}{2}$ Inch. Now, as the

Velocity by which the gravitating Liquor flows from the

Vessel, is equal to that which a heavy Body would acquire in

falling the same Distance as the Height of the Liquor in the

Vessel; therefore a Column thereof would be ,2276 of a

Second in emptying itself when the Liquor is 10 Inches high;

Now $1987,48 \times 0,2276 = 452,345$ Seconds, or $7' 32'' 34''$

the Time the Liquor takes in emptying itself.

Mr. *Charles Wildbore* of *Nottingham*, answers it thus.

Let $s =$ the Sum, and $d =$ the Difference of the Sides;

$x = AB$, then (*per* 30 Euclid. 6.) ,61803 $\times PB$, and, 38197 $\times$

$= AP$, their Difference is 23606 x . And *per* Trigonometry

$x : s :: d : 23606x$. Multiplying Extremes and Means, we

get this Equation, $23606x^2 = sd$. Ergo $\sqrt{\frac{sd}{23606}} =$

184,09; whence the Solidity of the Prism $= 35125$ cubic

Inches. And it is proved by Writers on Hydrostaticks, that a

Cylinder of Water, whose Height is 193 Inches, would empty

itself in a second of Time, and the Area of the Hole $=$

$1,76715 \times 193 = 341,05995$ cubick Inches, the Velocity

per Second; and $35125 \div 77,637 = 452'' 45' = 7' 32'' 27''$

the Time of its emptying itself.

Mr. *Will. Lucas* of *Cottingham*, solves the 7th Question thus.

By Trigonometry $AB = 184,08$, and $CP = 38,159$;

whence the solid Content of the Prism $= 35112,464$ solid

Inches;

Inches; and by the Laws of Hydrostaticks, in the Time that a Body is falling through the Height of the Liquid above the Hole, a Column of the Liquid spouts out equal twice that Height; hence as 193 In. : $1\frac{1}{2}$: : 10 In. : $\sqrt{22}$. And, as 35,343 solid In : 2276 : : 35112.404 solid In : 226,1514 = Time of running out with the first Velocity. And by Mr. Emerson's Fluxions, Page 110, we get $2 \times 226,1514 = 7,5383$ Minutes, the whole Time of running out.

Mr. Lionel Charlton, Mr. Sam. Bamfield, Mr. Zach. Gaskell, Mr. Tho. Moss, and several other ingenious Contributors, sent us very good Solutions to this Question.

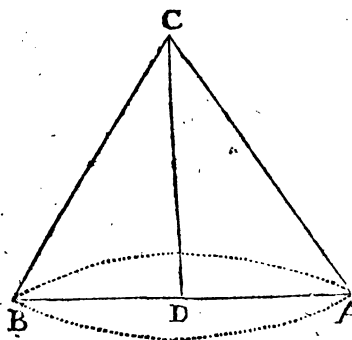
8 Question (148,) answered by Mr. Will. Bewil.

Let $x = \frac{1}{2}$ the Diameter of the Base of the Cone, and $y =$ the Length of the slant Side; $p = 3,1416$: then $p x y = c$; and $p x \times \frac{1}{2} \sqrt{y^2 - x^2} = s$; by expunging y , it will be $\frac{p}{3} \times x^2 \sqrt{\frac{c^2}{p^2 x^2} - x^2} = s$; which squared, and put in Fluxions is $2 c^2 - x \dot{x} - 6 p^2 x^5 \dot{x} = 0$. Or, $c^2 = 3 p^2 x^4 = p^2 x^2 y^2$; or $3 x^2 = y^2$. Hence $x^2 : y^2 :: 1 : 3$, that the Square of half the Diameter of the Cone, is to its slant Side : : as 1 : is to 3. Again, by returning the two Equations, that is $p x y = c$, and $\frac{p x^2}{3} \sqrt{y^2 - x^2} = s$; and by expunging y ; $\frac{9 s^2 + p^2 x^6}{x^2} = c^2$; this in Fluxions is, $6 p^2 x^7 \dot{x} - 18 s^2 x \dot{x} - 2 p^2 x^7 \dot{x} = 0$. Or $4 p x x^6 - 18 s^2 = 0$; and $s^2 = \frac{2 p^2 x^6}{9} = \frac{p^2}{9} \times \sqrt{x^2 - x^6}$; whence $3 x^2 = y^2$. Hence $x^2 : y^2 :: 1 : 3$ the very same as before.

The same answered by Mr. Tho. Moss.

Let the Diameter $AB = x$, and $AC (= BC) = y$; also put $p = ,7854$, the Area of a Circle whose Diameter is Unity ; then the Periphery of the Base will be $4 p x$; the Area thereof $p x^2$, and convex Superficies of the Cone will be expressed by $2 p x y = c$: $\therefore y = \frac{c}{2 p x}$: Moreover $\sqrt{y^2 - x^2} =$

CD , or $\sqrt{\frac{c^2}{4 p^2 x^2} - x^2} = CD$, which being drawn into $\frac{p x^2}{3}$ ($\frac{1}{3}$ of the Area of the Base) becomes $\frac{p x^2}{3} \sqrt{\frac{c^2}{4 p^2 x^2} - x^2}$ a Maximum ; or $\frac{c^2 x^2}{36} - \frac{p^2 x^6}{36}$ a Maximum ; in Fluxions, $\frac{2 c^2 x \dot{x}}{36}$



$$\frac{2c^2xx}{36} - \frac{6p^2x^5x}{36} = 0;$$

$$\text{hence } x^4 = \frac{c^2}{3p^2}, \text{ and } \therefore$$

$$x^2 = \frac{c}{p\sqrt{3}}; \text{ then } y^2 =$$

$$\frac{c^2}{4p^2x^2} = \frac{c^2}{4p^2 \times \frac{c}{p\sqrt{3}}} = \frac{c^2}{4pc}$$

$$\left(= \frac{c^2}{4pc} = \frac{c^2\sqrt{3}}{4pc} \right)$$

$$= \frac{c\sqrt{3}}{4p}; \text{ whence } x^2 (AB^2) : y^2 (BC^2) :: \frac{c}{p\sqrt{3}} : \frac{c\sqrt{3}}{4p} :: \frac{1}{\sqrt{3}} :: \frac{\sqrt{3}}{4} (:: 1 : \frac{3}{4}) :: 4 : 3. \text{ Whence it appears that the}$$

greatest Solidity of a Cone, under a given convex Superficies will be, when the Square of the whole Base is to that of the slant Side, in the Ratio of 4 to 3; or when the Square of the Perpendicular is to the Square of the Diameter of the Base in the Ratio of 1 to 2; or, which is the same Thing, when the said Perpendicular; is to the whole Diameter (AB) as $\sqrt{2} : 2$. Q. E. D.

Mr. Benj. Donn of Bideford, sent us the following Solution to the 8th Question; done by Master Thomas Bowen of Bristol, late of Mr. Donn's School, (see Mr. Mof's Scheme)

Let s = Solidity, $CD = x$, $c = 3,1416$; then $BA^2 = \frac{3s}{cx}$; and $BA = \frac{3s^{\frac{1}{2}}}{cx}$. Hence $DA^2 = \frac{3s}{4cx}$; and by 47

Eu. 1 $CA = x^2 + \frac{3s}{4cx}$; hence also, by Mensuration $\frac{c}{2} \times \frac{3s^{\frac{1}{2}}}{cx} \times x^2 + \frac{3s}{4cx} =$ the convex Superficies; $\therefore \frac{3s}{cx} \times$

$x^2 + \frac{3s}{4cx}$ is to be a Maximum. Which in Fluxions is $\frac{3s^{\frac{1}{2}}}{cx} - \frac{9s^{\frac{1}{2}}x}{4cx^2} = 0$. Reduced $x = \frac{3s^{\frac{1}{2}}}{2c}$.

Tabularias the Proposer's own Solution to the same.

Put $3,1416 = p$, Radius of the Base = x ; its Circumference

rence $= 2px$; and the slant Side $= \frac{c}{px}$, (supposing the convex Surface given) $\therefore \frac{c^2}{p^2 x^2} - x^2 = \frac{c^2 - p^2 x^4}{p^2 x^2} =$

Square of the Altitude, and the Area of the Base $= px^2$,

whence $px^2 = \frac{\sqrt{c^2 - p^2 x^4}}{3px} = \frac{x}{3} \sqrt{c^2 - p^2 x^4} =$ the Soli-

dity, a Maximum; or $c^2 x^2 - p^2 x^6$ is a Maximum, In Fluxions $2c^2 x \dot{x} - 6p^2 x^5 \dot{x} = 0$, $\therefore 3p^2 x^4 = c^2$; and $x =$

$\sqrt{\frac{c}{p\sqrt{3}}}$: Hence the Altitude $= \sqrt{\frac{2c}{p\sqrt{3}}}$ and the slant Side

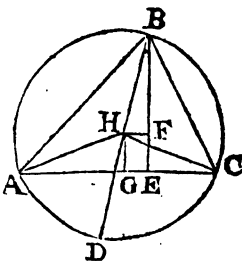
$= \sqrt{\frac{c\sqrt{3}}{p}}$; $\therefore$ the slant Side, Altitude, and Radius of the Base are, as $\sqrt{\frac{2}{3}}$, and $\sqrt{\frac{1}{2}}$; or as $\sqrt{3}$, $\sqrt{2}$, and 1.)

(9) Quest. 149. answered by Mr. Steph. Metcalfe of Walpoole.

Construction.

Let ABC Be the proposed Triangle, DB the Diameter of its circumscribing Circle; then, by Theorem the 17th of Ward's Introduction $\frac{AB \times BC}{BE}$

$= DB = 18$. From the Center at H, draw the Radii HA, HC; draw the Perpendicular HG, which will be parallel to BE; then draw HF parallel to AC, and the thing is done.



Calculation.

In the Triangle AHC are given, the two Sides AH, HC (each equal to 9) and the included Angle AHC $= 132^\circ 58'$ (being double by 20 Eu. 3. to the Angle at the Periphery, viz. the given vertical Angle ABC $= 66^\circ 29'$) from whence by common Trigonometry are found, the Base AC $= 16,504992$, and Perpendicular HG $= (FE) = 3,5912$.

Again, in the right angled Triangle HBF, are given the Perpendicular BF $= BE - HG$, and Hypotenuse HB $= AH = HC$; from which is found the Angle HBF $= 44^\circ 35' 39'' 40'''$. This taken from $66^\circ 29'$ the given vertical Angle, and the Remainder divided by 2, gives the Angle EBC $= 10^\circ 56' 40'' 10''' =$ Angle ABD; whose Complement to 90° , is the Angle ACB $= 79^\circ 3' 19'' 50'''$.

C

Lastly,

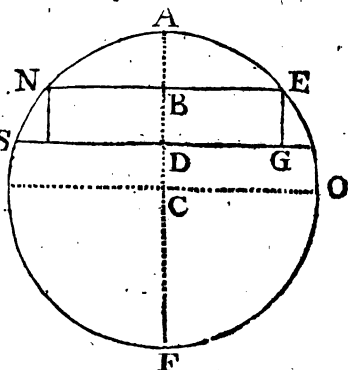
The GRANT. Diary; or, Math. Repository. 35

represent the Triangle required, and ABDK its circumscribing Circle, and the Perpendicular KHE being erected on the middle of the Base, will pass thro' the Centre of the Circle, and consequently is the Diameter of the Circle; and AE and DE being drawn, the Angle AED is equal to the Angle ABD (by 21 *Eu.* 3.) and also let FB be drawn parallel to DA. Then in the Triangle AEH, there is given the Base AH = 8,25 (found by the foregoing) and the Angle AEH ($= \frac{1}{2}$ AED) = $33^{\circ} 14' 30''$; and likewise HAE = $56^{\circ} 45' 30''$; to find HE, *per Trigon.* as Sine HEA : HA :: Sine HAE : HE = 12,6; and HE - HF (= BC) = EF = 2,6; and also, as HE : HA :: HA : HK = 5,411, and HK + HE = KE = 18,011 = Diameter of the Circle; also $\sqrt{EF \times FK} = BF = HC = 6,33$, and consequently DC = 14,584, and CA = 1,924, found by adding and subtracting HC to and from AH. Then (*per* 47 *Eu.* 1) $\sqrt{AC^2 \times BC^2} = AB = 10,183$, and consequently DB = 17,678, the Sides required.

Mr. Paul Sharp says, since the Rectangle of the two Sides, and the included $\angle$ is given; the Area is also given, *per Trigo.* = 82,5246; which divided by $\frac{1}{2}$ the Perpendicular gives the Base = 16,5049; which being known, the Angles at the Base are found = $79^{\circ} 03' 30''$ and $34^{\circ} 27' 30''$. By *Theor.* 16. *Thacker's Misc.* Then there are all the Angles, and one Side given, to find the other two Sides = 17,674, and 10,185 very nearly.

(10) Question 150. answered by Mr. Tho. Garrard.

Put a = the Diameter of the circumscribing Sphere, v = the Height of the required Segment = AD; c = 2827,44 its given Convex Superficies, S = 19339,6896 its given Solidity, and p = 3,1416 the Circumference of a Circle whose Diameter is Unity : then by Mensuration, $pav = c$, and $3a - 2v \times \frac{p v v}{6} = s$;



whence by a cubic Equation v will be found = 18, and a = 50. Now (putting $x = AB$) by the Property of the Circle

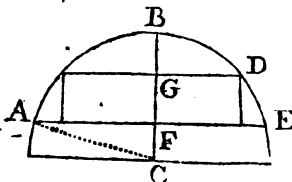
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AB x BF

$AB \times BF = BE^2 = dx - xx$, which multiplied by BD ($=v-x$) is a Maximum; which fluxed and reduced, gives $xx - 45\frac{1}{2}x = 300$. And by compleating the Square, &c. $x = 8,045525$; whence BD the Height $= 9,954475$, NE the Base $= 36,733$, the double Area of the Base $= 219,6$; the convex Superficies $= 1148,7$, and the whole Superficies $= 3268,3$, and the Solidity $= 10550$ (*viz.*) supposing the greatest Cylinder be generated by the Rotation of the Parallelogram $BEGDB$ round BD . But if we make EG the Base, and EN the Height, then putting $x = BD$, $v - x = AB$, and $32 + x = d + x = BF$, we have $\sqrt{dv - dx + vx - xx} \times xxx$, a Maximum; or rather $d vx^4 - dx^5 + vx^5 - x^6$ is a Maximum; which fluxed, &c. gives $xx - 11\frac{2}{3}x = 384$; solved $x = 14,6124$; whence the Base of the Cylinder $= 25,132$, the double Area of the Base $= 992,14$, the convex Superficies $= 1153,717$; and the whole Superficies $= 2145,857$, and the whole Solidity $= 7284,77$.

Now, seeing the Solidity is greater when we make the inscribed Cylinder to be generated by the Rotation of the Parallelogram $BEGDB$ round BD , than when we make EG the Base, it is evident the first Method is that which answers the Condition of the Question; and that the superficial Content of the greatest Cylinder is $32583,3$; and its Solidity $= 10550$.

The same answer'd by *Fillinghamiensis*.



Let the Solidity of the Segment $= 19339,6869 = s$; convex Superficies $= 2827,44 = c$; $3,1416 = p$; 52359 , &c. $= n$; Rad. $CB = CD = a$; and $BF = x$; then $CF = a - x$: Now the Theorem for

the Solidity of the Segment $ABEF$, is $\frac{3}{2} AF^2 \times BF^2 + BF^3 \times n$. But (by *Eu.* 47. 1.) $AC^2 - CF^2 = AF^2 \therefore 3 \times x \times \frac{2ax - x^2 + x^3}{n} = \frac{s}{n}$; or $6ax^2 - 2x^3 = \frac{s}{n}$; also $4pa^2 =$

the Surface of the whole Sphere. $\therefore 2a : 4pa^2 :: x : 2apx$

$= c$; where, $a = \frac{c}{2px}$; which substituted for a , in the other Equation, gives $\frac{3cx}{2p} - x^3 = \frac{s}{2n}$: solved; $x = 18$,

whence $a = 25$. Put FG the Length of the Cylinder $= x$, and $CF (= a - x) = 7 = b$; then $CG = b + x$, whence

$$\sqrt{a^2 - b^2} = x$$

$\sqrt{a^2 - b^2 + x^2} = DG$; therefore $px \times a^2 - b^2 - 2bx - x^2 =$
the Solidity of the Cylinder, a Maximum; or $a^2x - b^3x -$
 $2bx^2 - x^3$ is a Maximum. In Fluxions, $a^2\dot{x} - b^3\dot{x} -$
 $4b\dot{x}x - 3x^2\dot{x} = 0$. $\therefore x^2 + \frac{4bx}{3} = \frac{a^2 - b^2}{3}$; and solv'd x
 $= \sqrt{\frac{3a^2 + b^2}{3}} - \frac{2b}{3} = 9,95447$. Hence the superficial Con-
tent is 3269,972.

Mr. Zach. Gaskell answers the same Question, thus.

Put a = the given Surface; s = the Solidity; $c = 3,1416$;
 v = Sphere's Diameter, and z = Segment's Height; then (per
two well known Theorems) $\frac{3cvz - zcz^3}{b} = s$, and $cvz =$

a . From these two Equations, exterminating a , we get $z =$
18, and $v = \frac{a}{cz} = 50$. Put x = Cylinder's Height; then

will $3z + x \times 18 - x$ be equal to the Square of half the Cy-
linder's Diameter; which x^d into x , is to be a Maximum:
this in Fluxions and reduced, gives $x = 9,95447$. Whence
its Diameter = 36,7448. And the whole Superficies =
3269,9.

Mr. John Thompson of Witherley Bridge solves it thus (see Mr.
Garrard's Scheme.)

Put $19339,6896 = S$, $2827,44 = s$; $3,1416 = c$; $1,909855$
 $= m$; $AD = x$, and $DG = y$; then $DF = \frac{y^2}{x}$, and $AG =$
 $x + \frac{y^2}{x}$ x^d by cx gives $cx^2 + cy^2 = s \therefore y^2 = \frac{s - cx^2}{c}$;

and (per Ward, p. 424.) $\frac{3y^2x + x^3}{3} = S \therefore y^2 = \frac{mS - x^3}{3x}$
 $= \frac{s - cx^2}{c}$; Reduced $x^3 - \frac{3s}{2c}x + \frac{mS}{2} = 0$; Solv'd $x = 18$,

by which the Diameter is easily had = 50 = d ; Put $AB = v$,
then $\sqrt{dv - v^2}^{\frac{1}{2}} = BE$, and $BD = x - v \therefore \frac{dv - v^2}{x - v} \times$
 $x - v =$ a Maximum, in Fluxions $\frac{d\dot{v} - 2v\dot{v}}{x - v} \times x - v -$
 $d\dot{v} + v^2\dot{v} = 0$. Reduced $v^2 - \frac{2d - 2x}{3}v = -\frac{dx}{3}$.

$\square^c$. and Root extracted, $v = \frac{d+x}{3} \pm \sqrt{\frac{d+x^2}{9} - \frac{dx}{3}} =$

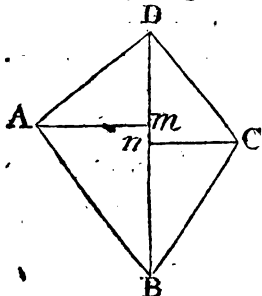
8,0455; from which the curve Superficies of the Cylinder is
easily had = 1149,1156; and the whole Superficies = 3269,956.

New MATHEMATICAL QUESTIONS proposed, to be answer'd in the next Year's Diary.

(1) Question 151 by *Tabularius*.

REQUIRED the greatest Cylinder that can be cut out of a Solid generated by the Revolution of a *Catenaria* about its Ordinate $= 50$, the corresponding Abscissa being $= 20$?

(2) Question 152, by *Mr Tho. Mofs*.



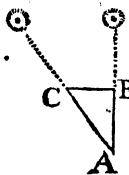
In the Trapezium ABCD are given the Sides AB (60) BC (50) the Angle ABC (74°) and the Difference of the Perpendiculars Am and Cn (30) falling on the Diagonal (DB) which bisects the Angle ADC. It is proposed, to find *geometrically*, the other two Sides, and the Area of the Trapezium?

(3) Question 153, by *Mr. Abr. Botham*.

Suppose a Globe of Wood when put in Water be observed to rise two Inches above the Surface of the Water, and afterwards when put into another Liquor whose specific Gravity to that of Water, is as .92989 to one, it rises only 1,25 Inch above the Surface of the Liquor: It is required to determine the Globe's Diameter?

(4) Question 154, by *Mr Zach. Gaskell*.

Travelling on a straight Road due North, I observed two Steeples, the nearest bore N.W. by N, the other N.W. by W.; proceeding two Miles, I put up at an Inn, and from an upper Room could discover the two Steeples standing in a direct Line. Pursuing my Journey, after riding three Miles further on, I made a third Observation, and found the Angle that the Road made with a Line directed to the first mentioned Spire, equal to the Angle made by that Line and another drawn to the Westernmost Spire: Required their Bearing and Distance from each other, with the Construction?



(5) Question 155, by *Mr. John Baston*.

Being in an unknown Latitude April 1, 1754, I observed the Sun to rise in a right Line with two Trees A and B; and on June 7, I observed it to rise in a right Line with two Trees A and C: The Distance of the Trees $AB=4$, $BC=3$, and $AC=5$ Poles. Quere the Latitude of the Place?

(6) Question

The GENT. Diary ; or, Math. Repository. 39.

(6) Question 156, by Mr. *Charles Wildbore* of *Nottingham*.

Required the Dimensions of the least Cone, that will circumscribe a common Paraboloid, whose Solidity is $= 32572,1088$ and convex Surface $12996,3609$: As also the Dimensions of its greatest inscribed Conic Frustum?

(7) Question 157, by Mr *Will. Kingston* of *Bath*.

A Gentleman has a Piece of Land in a triangular Form, containing an Acre and half; whose Sides are in Proportion as 5, 6, and 8. Out of which he would cut a *Fish Pond*, in the Form of a Rhombus; and to be the greatest the Thing will admit of. Required the Sides?

(8) Question 158, by Mr. *Stephen Metcalfe*.

The Altitudes of the greatest and least Cones, that can be inscribed, and circumscribed in, and about, the same given prolate Spheroid, are in Proportion to each other as 2^3 to 2 : Quere the Demonstration?

(9) Question 159, by *Fillinghamiensis*.

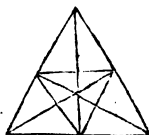
Required the Dimensions of the greatest *Appolonian Parabola* that can be inscribed in a Triangle whose Sides are 65, 70, and 75?

(10) Question 160, by Mr. *Paul Sharp*.

What Angle must a Projectile make with the Plane of the *Horizon*, with a given Velocity (*a*) per Second, to describe in its Flight the greatest Area possible?

Answers to the ÆNIGMAS, PARADOX, and REBUS's in the last Year's Diary.

- | | |
|-------------------|------------------|
| 1 A CRICKET-BALL. | 6 Letter A. |
| 2 A SHADOW. | 7 THOUGHT. |
| 3 TO-MORROW. | 8 AN HOUR GLASS. |
| 4 THE TONGUE. | 9 A PERRIWIG. |
| 5 HOPE. | 10 A THIMBLE. |



- 1 Rebus, FOLKSTONE. 2 Rebus, LONDON.

All the Ænigmas answered, by — *Random, Junior*.

DOLLY with Motion wond'rous nimble
 Cou'd exercise both TONGUE and THIMBLE, 4. 10.
 Tom flush'd with HOPE; fearless of Sorrow 5.
 Agreed to marry Doll To MORROW: 3.
 Each with th'Impatience of A Lover 6.
 Sincerely wish'd the Night was over:

40 Last Year's Ænigmas answered, 1756.

Tom comb'd his *WIGG*, and like an *Ass* 9
 To hurry *Time*, he shook his *GLASS*. 8.
Doll, as she walked o'er the *Meadows*
 Wish'd *Hours* would fly as quick as *SHADOWS*; 2.
 And as the *CRICKET-BALL* went past 1.
 She pray'd that *Time* might fly as fast!
Tom THOUGHT the *Town* would put its *Jokes* on 7.
 New-married *Folks*, so quitted *FOLKSTONE* 1 *Reb.*
 And tied the lasting *Knot* at *LONDON* 2 *Reb.*
 Which, seldom ought but *Death* has undone.
 These vast *Discoveries*, pray hand 'em
 To future *Ages*. — — — *Junior Random.*

Mr. John Reyd of *Penryn* in *Cornwall*, answers them all thus.

Within a *Grove*, whose spreading *Branches* made
 'Midst *Summer's Heat*, a pleasing cooling *Shade*:
 (Here may the *Reader*, if he curious be
 Each *Tree's Position* in the *Margin* see.)

Within this *Grove* fair *Chloe* did reprove
 Her *Shepherd Damon* for a *Breach of Love*.
 To clear himself, just *Heav'n* he did invoke!
 And thus the charming *Chloe* he bespoke.

Sooner shall *FOLKSTONE* be to *LONDON* join'd, 1. 2. *Reb.*
 And THOUGHT for ever quit the human *Mind*: Ænig. 7.
 Sooner each *Hair* shall from my *PERUKE* fall; 9.
 And *Chloe's THIMBLE* hold a *CRICKET-BALL*; 10. 1.
 Sooner each *Sand* in *Time's* alarming *GLASS* 8.
 In *Magnitude* a *Mountain* shall surpass:
 Sooner shall *A* forsake the *Cris Cross* *Line* 6.
 And *SHADOWS* cease, tho' *Sol* most glorious shine: 2.
 Sooner my *TONGUE* shall henceforth mute remain, 4.
 Not once to *HOPE* it e'er shall move again: 5.
 Sooner shall we To *MORROW* overtake, 3.
 Than I my dearest *Chloe* will forsake!

This said, he closely clasp'd her in his *Arms*,
 Her *Doubts* increas'd the *Lustre* of her *Charms*;
 She own'd a *mutual Passion*, and confess'd,
 That in his *Love* alone she cou'd be bless'd!

Mr. Anthony Moore of *Grampound* in *Cornwall*, sent us *Solu-*
tions to all the *Ænigmas*, in a *Soliloquy* upon *Death*,
 written in a *Country Church Yard*.

How awful is the *Scene* while here I tread
 Those venerable *Mansions* of the *Dead*!
 Around me *Tombs* and *Sepulchres* arise;
 Silent they speak — they teach me to be wise —

The GENT. Diary ; or, Math. Repository. 41

Then let them speak — nor do they speak in vain,
 I feel th' Impressions *thrill* thro' ev'ry Vein!
 Time was those Ashes liv'd — A Time shall be 6.
 When others thus shall stand, and gaze at Me.
 The Clock strikes Twelve — how solemn is the Sound!
 Hark how the Strokes from hollow Vaults rebound!
 Whose Tomb is that? — it speaks — 'tis *Mira's* Tomb,
 Torn from the World in Beauties fairest Bloom.
Mira was once the Praise of ev'ry TONGUE 4.
 Virtuous and lovely, innocent and young :
 She too with Ease the worthless Fop could trace
 Deck'd out with essenc'd WIG, and Loads of Lace : 9.
 Books, and her THIMBLE did her THOUGHTS divide, 10.7.
 And all her Hours were usefully employ'd.
 What then is Life? — all SHADOW — all a Cheat, 2.
 Fool'd on by HOPE, Men favour the Deceit : 5.
 Life is an *Inn*, where scarce we stay to bait,
 Death the sure Passage to an endless State!
 As ebbing Sands in HOUR GLASSES run, 8.
 So hastens Life, and soon it will be done.
 Nothing is stable on this earthly BALL, 1.
 Nothing my own, but Virtue I can call :
 Awake, then, O my Soul ! true Wisdom learn,
 Nor till To-morrow the great Work adjourn. 3.

Mr. Sam. Bamfield of Honiton in Devonshire, answers all the
Ænigmas in a Soliloquy on his late *Sickness*, as follows.

What THOUGHTS then circled! What strange wondrous sight?
 Of FUTURE STATE appear'd, both Day and Night? — 7.
 The wisest TONGUE my Views could ne'er express! 3.
 None (unexperienc'd) can such Prospects guess. 4.
 One Work was good; one bad; — doubted A Crown! 6.
 My HOPES like tosd' up BALLS — now up then down: 5.1.
 Sometimes full Sun pour'd in; — then SHADOW'd soon, 2.
 And my short GLASS seem'd run before 'twas Noon. 8.
 Like NEEDLES driv'n * — sharp Pains did pierce my Side;
 No living WIGHT the like e'er felt, I cry'd! 9.
 But kind Omnipotence dispell'd the same,
 And now I gratefully extol JEHOVAH's Name!

* Alluding to a Thimble.

Another Solution to the *Ænigmas* in a Letter to

(2 Rebus) LONDON, March 21, 1755.

Dear Peggy PERUKESMORE, (9)

I have some THOUGHTS (7) of being at FOLKSTONE (1 Reb.)
 the Day after To-morrow (3), when I HOPE (5) to disengage

42 Last Year's Ænigmas answer'd, 1756.

you from your THIMBLE (10) for an HOUR or so; to take
A (6) GLASS (8) with me at the BALL, where we will be as
merry as CRICKETS (1): you may as well hold your TONGUE
(4) as make any Excuses; for tho' you may imagine them to
be very substantial ones, they will be no more than SHA-
dows (2) to your Admirer, F. F. Mingle.

All the Ænigmas answer'd by *Emilia*.

- | | |
|---|-------|
| TO-MORROW (don't fear) from <i>Phylinda</i> you'll hear | 3. |
| And he'll say that his Love is divine; | |
| But, take care of his TONGUE, for it often tells <i>wrong</i> , | 4. |
| Like an HOUR GLASS out of its Time. | 8. |
| HIS THOUGHTS as a SHADOW are subject to change | 7. 2. |
| When it's gone 'tis in vain for to call; | |
| HIS WIGG and his Snuff Box employ most his Time | 9. |
| Tho' he wavers as oft as A BALL. | 6. 1. |
| I HOPE (for my sake) my Advice you will take, | 5. |
| And that nothing your Blifs may destroy, | |
| Till I see you again, when with THIMBLE and Pen | 10. |
| We'll sweetly our Hours employ. | |

Mr. *D. Davis*, Writing Master at *Burley* near *Minchinhampton*,
sends the following Solution to all the Ænigmas, in the good
School Boy's Resolution.

Dear Sir, your good Advice last Year, Justly deserves my Thanks and Care.
You've there convinc'd me of your Love, To me it shall successful prove.
As oft as *Pææbus* sets and rise, I'll offer up my Sacrifice;
My TONGUE shall ne'er my Parents grieve, Their THOUGHTS perplex,
nor HOPES deceive. 4. 7. 5.

To ev'ry one concern'd with me, I'll always just and punctual be.
While others vainly spend their Time, At Cards and CRICKET in their
Prime,
Each fleeting *Moment* I'll improve (Such SHADOWS ne'er shall gain my
Love) 2.

I'll cultivate my Mind to Day, Pastime shall till TO-MORROW stay. 3.
Neat in my DRESS I'll always go, But not fantastic like the Beau; 10.
My WIGGS I'll have genteelly made, But more for use than grand Parade; 9.
For still my greatest Care shall be, To cloth myself with Modesty.
From All Excess I will abstain, For Lux'ry has its Thousands slain. 6.
Bad Company I'll always shun, But gladly to the Temple run.
Thus, Sir, I am resolv'd to spend, The HOURS that Providence shall lend, 8.
That when I hear the Trumpet sound, I may with endless Joys be crown'd!

We likewise received several good Solutions in Verse, to all the Ænig-
mas, from Mr. *L. Charlton*, Mr. *Nutter*, Mr. *Wildbore*, Mr. *Handford*,
Mr. *Bailey*, Mr. *Robinson*, Mr. *Lucas*, Mr. *Heaford*, Mr. *Bacon*, Mr.
Swift, Mr. *Thompson*, *Careless Jack*, Mr. *Cbeffer*, Mr. *Lockey*, Mr. *Dyke*,
Mr. *Tarratt*, Mr. *Roxoe*, Mr. *Underwood*, Mr. *Noortbouck*, Mr. *Smith*,
Mr. *Drury*, Mr. *Mason*, Mr. *Ingram*, Mr. *Watson*, and several other of
our ingenious Contributors; but room will not permit their Publication.

New

The GENT. Diary; or Math. Repository. 43
New Ænigmas to be answer'd next Year.

1 Ænigma (107) by Mr. Thomas Pooke.

I *N England* I have always been,
In *France* nor *Spain* I ne'er was seen:
In *Italy* have not appear'd
Nor yet in *Rome* since her Head rear'd;
I've in all distant Regions been,
And in *Bengall* am always seen;
At *Goshen* too in *Aegypt's* Land,
Where *Moses* by divine Command,
Call'd in a Train of deadly Woes
To kill and humble *Isr'el's* Foes.
Thus, having travel'd far and near
I now with ev'ry Thing appear;
Perhaps you'll think it very strange,
I'm always subject still to change,
Yet from the Right I never swerve
Tho' always forc'd a Rogue to serve:
There is what looks like Pride in me,
'Cause with the Great I always be;
But with the Poor I ne'er am found
Yet with the Beggar and the Ground }
But with the Rich cannot be bound. }
There's only one Month in the Year,
In which I'm ever seen t'appear,
And then, with ease I may be seen,
I alway am on ev'ry Green:
Take one Hint more, which now I add
No King's without me, good or bad.

2 Ænigma (108) by Mr Charles Mason.

Who were my Parents few can tell, nor neither can I shew;
I (*Hermit* like) live in a Cell, nor *Sin*, nor *Sorrow* know.
My Food the *Vitals* of my Nurse, as *Nature* doth direct,
Which often causes many a Curse, but doth not me affect.
My *Viands* being nearly spent, no longer *there* I dwell;
Leave a foul House, and pay no Rent; desert my *native* Cell!

3 Ænigma (109) by — Random, Junior.

In Summer I the least am seen,
Herein resembling Night's fair Queen;
Like her, inconstant I appear,
And various *Forms* and *Faces* wear:
As She, sometimes obscures from Sight
Bright *Sols* all cheering gladsome Light;

I, in like manner sometimes do
 The brightest Object here below.
 All *Tincts* and *Shapes*, in Me are seen
Red, Yellow, Purple, Blue and Green ;
Earth, Seas, and Skies, and Beasts and Birds
 My *varying* Countenance affords :
 Nor, will it seem exceeding strange
 That I should be so apt to change,
 When you are told I'm fashion'd still
 By fickle *Woman's* wav'ring Will :
 Yet, tho' my *Fickleness* is owing
 To *Arts* and *Works of Woman's* doing
 This (you perhaps) will think me strange in
 That I prevent the FAIR from *changing*.
 More of myself should I explain
 A Riddle I should not remain.

4 Ænigma (110) by Mr. *Tim. Drury* of Great Houghton in
Yorkshire.

I am the rightful Empress of the Soul,
 Do all exorbitant Desires controul ;
 Check ev'ry wild Excursion of the Mind,
 By my wife Dictates happily confin'd :
 'Tis I, that shou'd o'er all your Sense preside
 Correct your Notions, and your Judgment guide;
 But false Opinions rooted in the Mind,
 Hoodwink the Soul, and keep me always blind :
 My Dwelling ne'er is found with gaudy Things
 Whose short Enjoyment no true Pleasure brings ;
 But have an Empire of a nobler Kind,
 My regal Seat's in the celestial Mind ;
 Where, with a God-like, and a peaceful Hand
 I rule, and make those happy I command :
 For while I govern, all within's at rest,
 No stormy Passion revels in the Breast :
 But, when my Power is despicable grown,
 And rebel Appetites usurp my Throne ;
 The Soul no longer quiet Thought enjoys,
 But all is Tumult, and eternal Noise !

5 Ænigma (111) by Mr. *Sam. Hammond* of Nottingham.

Though I in HEAVEN first began to be,
 Yet GOD, who all Thing formed, made not me ;
 For, seem the Proposition e'er so odd,
 Creating Me, he'd cease to be a God ;

And

The GENT. Diary; or, Math. Repository. 45

And yet 'tis something *excellent* and *good*
That gives *Me* BEING, or so *understood*.

Thro' *Me* frail *Adam* fell, just *Abel* dy'd,
Young *Jacob* left his Home to seek a Bride;
Thro' *Me* lov'd *Rachel* made his Anger burn,
And 'twas *Me* that hasten'd his Return.
I Author was of *Joseph's* abject State,
Whence he became so eminently great;
And *He* that *Israel* freed from Bondage vile
By means of *Me* was cast into the *Nile*.

With *Young* and *Old* I'm very much in Fashion,
Especially 'mongst those o'th' same *Vocation*;
With *Underlings* in ev'ry *Art* and *Science*,
Wealth, *Honor*, *Beauty*, *Wit*, in close *Alliance*:
Yet no Man living ever was above me,
And they who are below me often love me;
Though from my *Pride* and *Jealousy* proceed
Wrath, *Hatred*, *Malice*, ev'ry cruel Deed.

Like *Malefactors* hung in Chains alive
I prey upon myself, and think I thrive;
But all's a gross *Delusion*, for (as they)
The more I gnaw the more I pine away.

Some think the squinting Leer and meagre Face
Deriv'd from *Me* in those of *Jewish* Race,
As being *emblematical* of *Me*;
Declare my *Name*, and trace my *Pedigree*.

6 Enigma (112) per Jacobum Whitley, Hisfrionem.

Around the ebon Throne of gloomy Night
E'er sin-stain'd Satan takes his vagrant Flight;
Or e'er the orient-Beam of rosy Morn
Gilds the gay Spangles on the pointed Thorn;
Or when the silver Regent of the Sky
Illumes the nether Globe, from *Latmos* high }
And Stars imprint the concave Canopy:
When golden *Phæbus* glads with genial Ray
In his progressive Ride, the Noon of Day
With dulcet Notes I sooth th' attentive Ear
Or tremulate the guilty Soul with Fear.
In drear Uncertainty I always roam,
No Town my Tenement, no House my Home;
Yet, such my Life, I emulate the Wife,
Tho' I'm to ev'ry Vice a Sacrifice.
No mortal Man can more a Patriot be
I one Day die to set my Nation free;

Yet, the next Night tyrannically brave,
 I struggle hard my Country to enslave.
 In royal Pomp at smiling Seasons plac'd
 High in Esteem by fickle Fortune grac'd.
 No Form appears more great or good than I,
 Dear to the Heart, and lovely to the Eye!
 In four and twenty Score of Moment's Space
 (Of such a Nature is my hapless Case)
 My splendid Covering of gaudy Hue
 Is into Rags inverted, Red and Blue;
 In such a tatter'd and dejected State
 As that of *Lazarus* set at *Dives*' Gate;
 Tho' strange, most true it is, I'm then most free,
 And blest'd amidst lean-sided Poverty.
 Of Grief and Joy I Portions can dispense,
 Despis'd by Fools, I'm priz'd by Men of Sense:
 One Thing I boast, my chief Felicity,
 The secret Murder is reveal'd by Me;
 And antient Heroes long in Silence laid,
 Are by my Magick now immortal made:
 All the wide World for me is but a Round
 And ev'ry Man within it like me found:
 Of each Religion in this earthly Ball
Turk, Jew and Christian, Infidel, and All!
 Old Hydra-headed Vice I always shame
 And yield white Virtue an etern' Fame.

7 Ænigma (113) by Mr *Cha. Wildbore* of *Nottingham*.

Attend ye Artists to my Fame, And you will quickly know my Name.
 I am a Monster without doubt, That antient Sages put to rout,
 And made 'em own, against their Will, The Weakness of their magic Skills:
 I am a Beast of Prey also, Whose frightful Corps doth strangely go;
 Voracious too I thirst for Blood, My Habitation's in a Wood;
 In which (for to surprize you more) My Sustenance is human Gore:
 My sanguine and voracious Clan Do chiefly haunt the *Isle of Man*,
 Where, if I'm taken, wretched Fate, I feel the Weight of human Hate,
 Without Resistance lose my Breath, Am burn't alive, or rack'd to Death.
 I now my wondrous Tale have told, from which you may my Name unfold.

8 Ænigma (114) by Mr. *Isaac Tarratt* of *Epsom*.

My Age unknown, yet resident on Earth,
 Tho' *Locke* affirms the Devil gave me Birth.
Gulliver says he knew me very well,
 And where he's been his Travels plainly tell.
 Fam'd *Aristotle* I did oft frequent,
 And suble *Stilpo* into Exile sent.

I've poison'd more than e'er *Ducasso* did
 My Banes more dangerous and more closely hid.
 Good Lord ! 'twou'd make you laugh was I to tell,
 What pretty Tricks I play'd with *Machiavell* ;
 I gain'd Esteem with many a Roman Dame,
 Bold *Juvenal* records it to their Shame ;
 My callid Slights can raise to such a Pitch,
 You'd almost swear, I was some Circean Witch ;
 Of Bad make Good, and Wrong transform to Right,
 And, with much Care, can make a Raven white.
 And still a more surprizing Wonder yet,
 Can of a Ninney, make a wondrous Wit,
 And I (but now you'll say I'm full of Jokes)
 Can serve Attorneys like a *Jack-a-Nokes*,
 'Creep into Courts, and there upon 'em wait,
 And, undiscover'd, Mischief perpetrate.
 When both the Houses do assembled sit,
 You'll find me busy as a Grub-street Wit ;
 Sometimes indeed, I have discover'd been,
 But, to be plain, am very rarely seen ;
 But, too well known, and to confess the Truth,
 You'll find me aping of a lovely Youth :
 My Emblem is, a Prince in Masquerade,
 Excuse me Belles, I fear too much I've said.

Tabularius has sent us the following Nofegay of Flowers ;
 enquiring, what is,

1. The Glory of the Creation ?
2. What Insects produce, and the Nurses Employment ?
3. The Vehicle of a triumphant Hero, and what a King rules ?
4. Half congealed, and what a Sot unwillingly leaves ?
5. Bitter's Antagonist, and the Conqueror of England ?
6. A philosophical Instrument, and what a Parson wears in his Hat ?
7. The Emblem of Constancy, and a Sot's Delight ?
8. The Father of a King of Israel, and the Parent of Riches ?
9. A vain Youth ?
10. A bright Object, and a City in Asia ?
11. The second Person in Latin, and the Seat of Salutation ?
12. Juno's Messenger ?
13. A terrestrial Ball, and the Arms of Scotland ?
14. The Ornament of an Emperor ?
15. What lies low, flies high, and what adds speed to a Horse ?
16. What the Jealous never enjoy ?
17. The Support of an House, and the Dust of a Mill ?
18. The Support of a Dairy, and a false Step ?
19. A fine Bird, and the Organ of Sight ?
20. The most blessed of Women, and the finest of Metals ?
21. A musical Instrument, and a Particle in Latin ?

An Alphabetical Catalogue of Contributors to this Diary
the Fig: 1, 2, 3, &c. shewing the Questions, the Numerical Letter i, ii, &c.
the Ænig. and P. R. & An. the Paradox Reb. & Anagr. Reb. each answd.

M R Tho. Allen 1, 5, 6, & 10. all Æ. P. R. An. Mr Anth. Arch all
Æ. P. R. An. Ver. all Q. Angelica all Æ. Mr Tho. Breaks
all Æ. in Ver. Prop. 2 Æ. Mr Wm Bailey all Æ. P. in Ver. Mr Wm
Bacon 9, all Æ. P. R. in Ver. Mr Ab. Botham 5, 7, 8, 10. all Æ. but
v. prop. 1 Q. Mr Wm Bevil 2, 4, 5, 7, 8. Mr Jos. Briscall P. R. An.
Mr John Boston 5, 8, 10. i, ii, iii, v, viii, ix, x. Prop. 1 Q. Mr Geo.
Butler all Æ. P. R. An. prop. 1 Æ. Mr Sam. Bamfield all Q. but 3. all
Æ. P. R. An. in Ver. prop. 1 Æ. Miss Bridget all Æ. prop. 1 Æ.
Miss Polly Bright all Æ. Mr Lionel Charlton all Q. all Æ. P. R. An.
in Ver. prop. 1 Q. & 1 P. Mr Christ. Cooke i, v, vi, vii. Jack Careless
all Q. but 1, 3. all Æ. P. R. An. in Ver. Mr John Chester all Æ. P.
R. An. in Ver. Mr Rob. Dalton i, ii, iii, v, vi, viii, ix, prop. 2 P. Mr
D. Davis all Æ. in Ver. prop. 2 Æ. Mr John Dyke all Æ. P. R. An.
in Ver. Mr Tim. Drury 7, 8, 10. all Æ. P. R. An. in Ver. Mr Benj.
Donn all Q. Mr Wm Downing all Q. Mr John Doubtful all Q. but 3.
Mr Luke Elstobi, ii, viii. Emilia all Æ. P. in Ver. Miss Enfield all Æ.
Mr John Edwards all Q. Fillinghamiensis 5, 8, 9, 10. Mr Tho. Garrard
all Q. all Æ. P. R. An. Mr Zach. Gaskell 1, 2, 5, 6, 7, 8, 10.
George—all Q. all Æ. in Ver. prop. 1 Æ. & 1 P. Mr Sam. Handford
all Æ. in Ver. Mr Christ. Hudson—ii, v, R. prop. 2 Æ. Mr Joshua
Holroyd 7, 8, 9, 10. all Æ. but v. P. R. An. Mr Wm Heaford all Æ.
P. R. An. in Ver. Mr Tho. Hare 1, 3, 8, 10. all Æ. but iii, & iv R.
Mr Jos. Heartley all Æ. but iii, iv. prop. 1 Æ. Mr Jacob Hill, Officer
in the Excise, all Æ. prop. 2 P. Mr John Hammond all Æ. but iii. prop.
1 Æ. & 1 P. Mr James Hain all Æ. P. R. An. in Ver. Mr Sam.
Hammond all Æ. P. R. An. prop. 1 Æ. & 3 R. Miss Dolly Holden
all Æ. Miss Julia Handiside all Æ. in Ver. Mr Wm Ingram all Æ.
P. R. An. in Ver. Mr Wm Kingston all Q. all Æ. P. R. An. prop.
1 Q. Mr Wm Lotkey all Æ. P. R. An. in Ver. Mr Tho. Lampit all
Æ. in Ver. prop. 2 R. Mr Wm Lucas 2, 7, 8. all Æ. P. R. An. Mr
Anth. Moore all Æ. in Ver. prop. 1 Æ. F. F. Mingle all Æ. in Prose
prop. P. Mr Tho. Moss all Q. prop. 2 Q. Mr Steph. Metcalf 8, 9, 10.
prop. 1 Q. Mr Christ. Mason all Æ. P. R. An. in Ver. prop. 2 Æ.
Mr Robt. Marsh all Æ. but vii. P. R. An. Mr Cha. Mason 4, 8, 10.
prop. 1 Q. Mr John Nutter all Æ. in Ver. prop. 1 Æ. Mr J. Noorthouck
all Æ. P. R. An. in Ver. Mr John Pickburn prop. 1 Æ. Philanthropos
— Mr Tho. Pooke all Æ. but vi. prop. 1 Q. Mr John Palmer all but
vii. in Ver. Mr John Pinchem all Q. Miss Sally Poole all Æ. in Ver.
Mr John Reyd all Æ. P. R. An. in Ver. Mr Wm Richardson i, iii, v,
vi, vii, viii, ix. R. An. Mr L. Randles — Random Junior all Æ.
in Ver. prop. 1 Æ. Mr Ed. Robinson all Æ. but iv. in Ver. prop. 1 R.
Miss Sop. Rogers all Æ. R. Mr Malton Richardson P. Mr Alex. Rowe
4, 8, 9. all Æ. P. R. An. in Ver. Mr John Randles prop. 1 Æ. Mr
Wm Swift all Æ. in Ver. prop. 2 Æ. & 1 R. Mr Wm Smith all Æ. P.
R. An. in Ver. prop. 1 Q. 1 Æ. 1 P. Mr Paul Sharp 7, 8, 9, 10. all Æ.
but iii, iv. prop. 1 Q. Mr Wm Spicer 2, 4, 8, 9, 10. Mr John Thompson
5, 8, 10. prop. 1 Q. Mr John Tapner all Æ. but iii, & x. P. R. An.
Tabularius prop. 2 Q. Mr John Thompson all Æ. in Ver. prop. 1 Æ.
1 P. Mr Isaac Tarratt all Æ. P. R. An. prop. 1 Æ. Mr Cha. Under-
wood all Æ. in Ver. prop. 1 Æ. Mr Ric. Waddington prop. 1 Æ. Mr
Cha. Wildbore 1, 3, 4, 5, 7, 8, 9, 10. all Æ. P. R. An. in Ver. prop. 2
Q. Mr Hugh Westman 7, 8, 10. Mr Geo. Watton all Æ. P. R. An.
in Ver. prop. 1 Æ. Mr Math. Ward's last Year's Letter was mislaid.

The LADIES' Diary
OR,
Woman's ALMANACK,
For the YEAR of our LORD, 1756.

Being the BISSEXTILE, or LEAP-YEAR.
Containing New Improvements in ARTS and SCIENCES,
And many Entertaining PARTICULARS;

Adapted for the *Use* and *Diversiſon* of the

F A I R - S E X.

Being the Fifty-Third ALMANACK Publish'd of this Kind.



Y^e Happy FAIR, whom Sacred Transports fire,
Accept, Propitious, what Your Selves inspire:
For YOU the MUSE her kindest Influ'nce lends,
And SCIENCE wide its ample Bounds extends.
Alike your FORM and WIT resistless Charm,
With LOVE and VIRTUE every Bosom Warm.

Printed by *A. Wilde*, for the Company of STATIONERS, 1756.

Chronological NOTES for the YEAR 1756.

Golden Number	9	Shrove-Tuesday	March 2
Cycle of the Sun	1	Easter-Day	April 12
Epact	28	Whit-Sunday	June 6
Roman Indiction	4	Trinity Sunday	June 13
Domical Letters	D. C.	Advent-Sunday	Nov. 23

ECLIPSES in the YEAR 1756.

THERE will be only Two Eclipses this Year, both of the Sun, and both In-
visible to the Inhabitants of Great-Britain.

- I. *March 1st.* at 2 in the Morning the Sun will be Eclipsed in 11° Degrees.
This will be a great Eclipse, total and central, in the *Indian-Sea*.
- II. *August 27th.* at 7 at Night, the Sun will be totally Eclipsed in 3° De-
grees; Visible at *New-Spain, Jamaica, Terra-firma, and Places adjacent.*

RALPH HULST.

A TABLE for finding the Times of Rising, Southing, and Set-
ting of the principal Fix'd Stars, by shewing how much those
Times happen before, or after the Southing of the Seven Stars.

Names of the Stars.	Days of the Month	Time of Rising.	Time of Southing.	Time of Setting.	Meridian Altitude.
		H. M.	H. M.	H. M.	°
The Scorpion's Heart, <i>Antares</i>	1	14 b 52	11 b 17	7 b 42	12 40
Bright Star in the Harp, <i>Lyra</i>	1	—	9 b 4	nev. sets	77 2
Bright Star in the Eagle, <i>Adair</i>	1	14 b 39	7 b 53	1 b 47	46 42
Fomalhaut — — —	2	7 b 39	4 b 48	1 b 57	7 39
Bull's Eye, <i>Aldebaran</i> — — —	1	6 b 40	0 a 49	8 a 18	54 28
Capella — — —	1	—	1 a 25	nev. sets	84 22
Foot of Orion, <i>Rigel</i> — — —	1	3 b 40	1 a 30	6 a 50	30 00
Middle Star in Orion's Girdle — — —	2	4 b 6	1 a 51	7 a 48	37 6
Orion's Shoulder, <i>Betelgeuse</i> — — —	1	4 b 32	2 a 9	8 a 50	45 49
Great Dog Star, <i>Sirius</i> — — —	1	1 b 36	3 a 1	7 a 38	22 8
Castor — — —	1	5 b 55	3 a 44	13 a 23	70 52
Pollux — — —	2	5 b 2	3 a 57	12 a 56	67 4
Little Dog Star, <i>Procyon</i> — — —	2	2 b 40	3 a 53	10 a 26	44 20
Cor Hydrae — — —	2	0 a 16	5 a 41	11 a 6	32 53
Cor Leonis, <i>Regulus</i> — — —	2	0 b 51	6 21	13 a 33	51 38
Virgin's Spike — — —	1	4 a 24	9 a 37	14 a 59	28 37
Arcturus — — —	1	2 a 23	10 a 30	18 a 27	58 59

Example. To know the Time of the Rising of the Great Dog Star, on
Jan 1. First look against the proposed Day in the Calendar, and find the Time
of the Southing of the Seven Stars to be 8 h. 45 m. after Noon; from which I
subtract 1 h. 36 m. (found in the Table) and there remains 7 h. 9 m. for the
Time required. *Note,* Every Star rises and sets about 4 Minutes earlier each
Day, than on the preceding Day.

1756. January hath XXXI Days.

New Moon, the 1st, at Midnight
 First Quarter, the 9th, at 7 Morn.
 Full Moon, the 17th, at 11 Morn.
 Last Quarter, the 24th, at 6 After.
 New Moon, the 31st, at Noon.

Sun enters 23
 20th. 0 h. 24 m.
 Apparent Time.

1	T	Circumcision : Or, New-	8	5	3	55	23	4	7	M	0
2	F	[Year's-Day		5		55	22	58	6	f	ets
3	S			4		56		52	6		12
4	D	2 Sunday after Christmas		3		57		46	7		17
5	M	Old Christmas-Day		2		58		39	8		32
6	T	Epiphany : Twelfth Day		1		59		32	9		42
7	W			0	4	0		25	10		47
8	T	Lucian, Pr. and Martyr	7	59		1		17	11		51
9	F			58		2		9		Morn.	
10	S	Princess Elizabeth Born		57		3		1	0		54
11	D	1 Sunday after Epiphany		56		4	21	52	1		55
12	M			55		5		42	2		55
13	T	Hilary		54		6		32	3		54
14	W	Oxford and Camb. Term		53		7		23	4		52
15	T	[Begins		51		9		10	5		47
16	F			50		10	20	50	6		35
17	S	Old Twelfth-Day		49		11		48		7	ries
18	D	2 S. aft. Ep. Prisca, Mar.		48		12		37	5	A	44
19	M			46		14		24	6		51
20	T	Fabian. In eight Days of		45		15		11	8		0
21	W	Agnes. [St. Hilary 1 Ret.		44		16	19	58	9		10
22	T	Vincent, Martyr		42		18		45	10		24
23	F	Hilary Term Begins		41		19		32	11		41
24	S			40		20		16		Morn.	
25	D	3 Sund. aft. Epip. Conv.		38		22		1	0		56
26	M	[of St. PAUL		36		24	18	46	2		10
27	T	From the Day of St. Hil.		35		25		31	3		23
28	W	[in 18 Days, 2 Returns		33		27		16	4		32
29	T			31		29		1	5		34
30	F	K. CHARLES I. Martyr'd		30		30	17	44	6		26
31	S			28		32		27		7	fets

Days L. of D.	Day Inc.	D.breaks	Sun East.	Tw.ends	C.bef. S.	7 Stars So.				
1	7	50	0	6	0	4	8	8 A	45	
6		57	13	5	58				23	
11	8	7	23		54				1	
16		19	35	49	49	12	10	17	7	40
21		32	48	44	53	16	11	50		19
26		47	5	38	57	22	13	6	6	57

756. February hath XXIX Days.

First Quarter, the 8th, at 4 Mor.
Full Moon the 16th, at 2 Mor.
Last Quarter, the 23d, at 2 Mor.

Sun enters X
18th. 15 h. 16 m.
Apparent Time.

		Sun rises	Sun sets	Sun's Decl.	Moon ri. & sets
	Sundays, Holidays, &c.				
1	D Sunday after Epiphany	7 27	4 33	17 11	5 58
2	M Purif. or, Candlemas-Day	25	35	16 54	7 10
3	T On the morrow of the Pur.	23	37	36	8 20
4	W [3 Returns	21	39	18	9 27
5	T Agatha, Martyr	20	41	c	10 33
6	F	18	43	15 41	11 37
7	S	16	45	23	Morn.
8	D Sunday after Epiphany	15	46	4	0 41
9	M	12	48	14 45	1 40
10	T In 8 days of the Purification	11	50	25	2 36
11	W [4 Ret.	9	52	5	3 31
12	T Term Ends.	7	54	13 46	4 25
13	F Old Candlemas-Day	5	56	26	5 10
14	S Valentine, Bp. and Martyr	3	58	6	5 50
15	D Septuagesima Sunday	1	5	0 12 46	6 27
16	M	6 59	2	25	rises
17	T	58	3	4	6 A 56
18	W	56	5	11 43	8 10
19	T	54	7	21	9 26
20	F	52	9	0	10 43
21	S	50	11	0 39	Morn.
22	D Sexagesima Sunday	48	13	17	0 0
23	M	46	15	9 55	1 12
24	T St. MATTHIAS	44	17	33	2 20
25	W	42	19	11	3 25
26	T	40	21	8 48	4 21
27	F	38	23	26	5 5
28	S	36	25	3	5 46
29	D Shrove-Sund. Quinquages.	34	27	7 40	6 16

Days	Length Day In- of Day. creafed.	Day breaks	Sun East.	Twilight ends	Clock bef. Sun	7 Stars South.
1	9 6 1 22	5 32	5 4	6 28	14 b 8	6 A 34
6	25 40	24	9	36	38	13
11	43 58	16	15	44	46	5 53
16	10 01 2 17	7	20	53	37	34
21	29 36	4 58	26	7	8	15
26	40 56	49	32	11	13 24	4 56

1756. March, hath XXXI Days.

New Moon, the 1st, at 2 Morn.
 First Quarter, the 9th, at 1 Mor.
 Full Moon, the 16th, at 3 After.
 Last Quarter, the 23d, at 9 Mor.
 New Moon, the 30th, at 5 Aft.

Sun enters ♈
 19th. 15 h. 55 m.
 Apparent Time.

1	M	David, Abp. of Minevia	5	32	5	29	7	17	3	fets
2	T	Shrove-Tueid. Chad. Bp.		30		31	6	54	7	A 12
3	W	Ash-Wednesday		28		33		31	8	18
4	T			26		35		8	9	23
5	F	Princess of HESSE Born		24		37	5	45	10	28
6	S			22		39		22	11	30
7	C	Quadrages. 1 Sun. in Lent		20		41	4	58		Morn.
8	M	[Perpetua		18		43		36	0	29
9	T			16		45		12	1	26
10	W	Ember Week		14		47	3	49	2	17
11	T			12		49		25	3	6
12	F	Gregory		10		51		0	3	50
13	S			8		53	2	28	4	29
14	C	2 Sunday in Lent		6		55		14	5	2
15	M			4		57	1	49	5	53
16	T			2		59		27	6	mie
17	W	St. Patrick		0	6	1		3	7	A 17
18	T	Edward		58		3	0	38	8	36
19	F	Princess LOUISA Born	5	56		5		16	9	53
20	S	Cuthbert		54		7	N	8	11	10
21	C	3 Sund. in Lent. Benedict		52		9		33		Morn.
22	M	4th and Cam. Terms End		50		11		55	0	22
23	T			48		13	1	20	1	27
24	W			46		15		42	2	22
25	T	Lady-Day. Pr. Ed. Born		44		17	2	6	3	12
26	F			42		19		31	3	51
27	S			41		20		54	4	25
28	C	4 S. in Lent. Midlent Sun.		39		22	3	16	4	55
29	M			37		24		41	5	52
30	T			35		26	4	4	5	fets
31	W			33		28		27	7	A 19

Days	L. of Day	Day inc.	D. breaks	Sun East.	Tw. end.	C. bef. S.	Start So.								
1	10	57	3	13	4	42	5	39	7	18	11	39	4	A	41
6	11	17		33		31		42		29	11	31			23
11		37		53		29		48		40	10	12			5
16		57	4	13		10		55		50		45	3		46
21	12	16		32		0	6	1	8	0		15			28
26		35		51	3	48		7		12		42			10

1756. April hath XXX Days.

First Quarter, the 7th, at 8 Aft.
Full Moon, the 15th, at 2 Morn.
Last Quarter, the 21st, at 4 After.
New Moon, the 29th, at 9 Morn.

Sun enters 8
19th. 5 h. 0 m.
Apparent Time.

1	T		5	31	6	30	4	50	8A	23
2	F			29		32	5	13	9	27
3	S	Richard, Bp. of Chich.		27		34		3	10	27
4	C	5 S. in Lent. St. Ambrose		25		36		59	11	26
5	M	Old Lady-Day [Bp. of Mil.		23		38	6	21	Morn.	
6	T			21		40		44	0	19
7	W			19		42	7	6	1	10
8	T			17		44		29	1	54
9	F			15		46		51	2	34
10	S			13		48	8	13	3	7
11	C	6 Sunday in Lent Palm-		11		50		36	3	38
12	M	[Sunday		10		51		58	4	6
13	T			8		53	9	20	4	33
14	W			6		55		41	5	2
15	T	Mundy-Thursd		4		57	10	2	7	rises
16	F	GOOD-FRIDAY		2		59		23	8A	58
17	S			0	7	1		44	10	15
18	C	EASTER-DAY	4	58		3	11	5	11	24
19	M	Easter-Monday. <i>Alphons.</i>		56		5		25	Morn.	
20	T	Easter-Tuesday		55		6		46	0	26
21	W			53		8	12	6	1	20
22	T			51		10		27	2	3
23	F	St. GEORGE, Martyr		50		11		47	2	38
24	S			48		13	13	6	3	7
25	C	Low-Sund. St. Mark, Ev.		46		15		25	3	34
26	M	Duke of Cumberland Born		44		17		45	5	59
27	T	[Vic. Cullen		42		19	14	4	4	22
28	W	Or. and Cam. Terms Beg.		41		20		23	4	46
29	T			39		22		42	7	sets
30	F			37		24	15	0	8A	28

Days	L. of D.	Day Inc.	D. breaks	Sun East.	Tw. ends	C. bef. S.	7 Stars So.								
1	13	0	5	16	3	31	6	15	8	31	3	50	2	A	48
6		30		38		19		21		43	2	20			30
11		39		55		4		27		58	0	54			12
16		58	6	33	2	52		38	9	11	08	22	1		53
21	14	37		32		38		39		25	1	31			34
26		34		50		23		44		40	2	27			15

1756. May hath XXXI Days.

First Quarter, the 7th, at Noon.
Full Moon, the 14th, at 10 Mor.
Last Quarter, the 21st, at 1 Mor.
New Moon, the 28th, at Midn.

Sun enters 11
20th. 5 h. 57 m.
Apparent Time.

1	S	St. Philip and Jacob	4	35	7	26	15	18	9	A 27
2	C	2 Sunday after Easter		33		28		36	10	24
3	M	Invent. of Croxi. From the		32		29		54	11	13
4	T	[D. of East. in 15 D. 1 Ret.		31		30	16	11	11	59
5	W	Easter Term Begins		29		32		28		Morn.
6	T			28		33		44	0	40
7	F			26		35	17	1	1	13
8	S			24		37		17	1	46
9	C	3 Sunday after Easter		23		38		33	2	15
10	M	From the Day of Easter in		21		40		49	2	41
11	T	[3 Weeks 2 Returns		20		41	18	4	3	8
12	W	Old May-Day		18		43		19	3	35
13	T			16		45		33	4	6
14	F			15		46		48		rises
15	S			13		48	19	2	9	A 12
16	C	4 Sunday after Easter		12		49		16	10	19
17	M	From the Day of Easter in		10		51		30	11	17
18	T	[1 Month 3 Returns		9		52		43		Morn.
19	W	Dunstan A. B.		7		54		56	0	4
20	T			6		55	20	8	0	45
21	F			4		57		20	1	15
22	S			3		58		32	1	42
23	C	5 Sun. aft. East. Rog. Sun.		2		59		43	2	6
24	M	Pr. Fred. Will. Bo. From		0	8	0		54	2	31
25	T	[the Day of Easter in 5	3	59		1	21	5	2	59
26	W	[Weeks 4 Returns		58		2		15	3	17
27	T	CHRIST'S Asc. Holy Thur.		57		3		24	3	45
28	F	Mon. of Asc. 5 Ret. [Book		56		4		34		rises
29	S	K. CHARLES II. Reflor.		55		5		44	8	A 15
30	C	6 Sunday after Easter		54		6		53	9	8
31	M	Term Ends		52		8	22	2	9	55

Days	L. of D.	Day inc.	D. breaks	Sun. R. S.	Tw. spds	C. aft. S.	7 Stars So.
1	14 52	7 8	2 5	6 50	9 59	3 12	0 A 56
6	15 7	7 23	1 51	55	10 13	43	37
11	23	32	29	7	35	59	18
16	38	54	6	4	59	4 2	11 M 58
21	53	8 9	0 30	2	11 36	3 49	39
26	18 5	21	No Night	12	No Night	24	29

1756.

June hath XXX Days.

First Quarter, the 5th, at Midn.
Full Moon, the 12th, at 5 After.
Last Quarter, the 19th, at Noon.
New Moon, the 27th, at 3 Aft.

Sun enters ☿
20th 14h. 58 m.
Apparent Time.

1	T	Nicom. Fr. & M.	3	51	8	9	22	10	10	A37
2	W	[End		50		10		18	11	13
3	T	Oxford & Camb. Terms		49		11		25	11	46
4	F	Prince of WALES Born		48		12		32		Morn.
5	S	Boniface, B. of Mentz, Mar.		48		12		38	0	15
6	C	Whit-Sunday		47		13		44	0	43
7	M	Whit-Monday		47		13		50	1	7
8	T	Whit-Tuesday		46		14		56	1	33
9	W	Ember Week		46		14	23	2	2	0
10	T	Pss Amel. and Carol. Born		45		15		7	2	32
11	F	St. Barnabas		45		15		11	3	8
12	S			44		16		14		rises
13	C	Trinity Sunday		44		16		17	9	A 0
14	M	On the Morn. of the Holy		44		16		20	9	52
15	T	[Trin. 1 Return		43		17		23	10	37
16	W	Ox. & Cam. Terms Begin		43		17		25	11	12
17	T	Corp. Christi. St. Alban		43		17		27	11	43
18	F	Trinity Term Begins						29		Morn.
19	S							30	0	8
20	C	1 Sun. aft. Trin. Edward						29	0	31
21	M	Longest Day						29	0	54
22	T	King GEORGE II. Inaug.						28	1	18
23	W							27	1	43
24	T	St. John Bap. Midsum. D.		43		17		26	2	11
25	F			44		16		24	2	42
26	S	King GEORGE II. Procl.		44		16		22	3	17
27	C	2 Sunday after Trinity		44		16		20		sets
28	M			45		15		18	8	A33
29	T	St. Peter and St. Paul		45		15		15	9	12
30	W			46		14		11	9	46

Lo. D. at Lon. is 36 h.

9m. 54 f. on Account

of Refraction.

Days	L. of Day	Day inc.	Sun East.	C. after S.	Stars So.
1	16 19	8 35	7 16	2 39	10 M 54
6	27	43	18	1 50	34
11	30	46	19	0 52	14
16	34	49	20	0 10	9 55
21	35	51	20	1 12	32
26	34	Dec. 1	20	2 18	24
		No real Night but conf. Day- light or Twil.			

1756. July hath XXXI Days.

First Quarter, the 5th, at 9 Mor.
Full Moon, the 11th, at 11 Aft
Last Quarter, the 19th, at 2 Mor.
New Moon, the 27th, at 5 Mor.

Sun enters ♋
22d. 1 h. 57 m.
Apparent Time.

1	T		3	40	8	14	23	7	10	A 15
2	F	Visitation to B. V. Mary	47	13			2		10	42
3	S		47	13	22	57			11	7
4	C	3 S. aft. Tr. Martin, Bp	48	12		52			11	33
5	M	Old Midsummer-Day	49	11		47			11	57
6	T		50	10		41				Morn.
7	W	Trinity Term Ends	50	10		34			0	25
8	T		51	9		28			0	59
9	F		52	8		21			1	38
10	S		53	7		13			2	24
11	C	4 Sunday after Trinity	54	6		5			3	rises
12	M		55	5	21	56			8	A 22
13	T		56	4		47			9	2
14	W		57	3		38			9	36
15	T	Swinthin, Bp. of Winchester	58	2		28			10	5
16	F		59	1		18			10	31
17	S		4	0		0			10	55
18	C	5 Sunday after Trinity	1	7	58	20	58		11	18
19	M		2		57		47		11	42
20	T	Margaret	3		56		35			Morn.
21	W		5		54		24		0	10
22	T	Magdalen. Prs. Caroline	6		53		12		0	41
23	F	[Matilda Born	7		52		0		1	14
24	S		9		50	19	47		1	53
25	C	6 S. aft. Tr. St. James, Ap.	10		49		34		2	40
26	M	St. Anne, Mother of V. M.	12		47		21		3	32
27	T		13		46		8			sets
28	W		15		44	18	54		8	A 16
29	T		16		43		40		8	44
30	F	Dog-Days Begin	17		42		25		9	11
31	S		18		41		10		9	35

Days	L. of Day	Day dec	D. breaks	Sun East.	Tw. ends	C. bef. S.	7 Start So.
1	16 29	0 6		7 19		3 b 18	8 M 51
6	20	15	No real	18	No real	4 11	31
11	12	23		16		56	10
16	2	33	Night.	13	Night.	5 30	7 50
21	15 50	51		9		51	30
26	36	59	0 46	5	11 11	57	10

1756. August hath XXXI Days.

First Quarter, the 3d, at 4 After.
Full Moon, the 10th, at 7 Morn.
Last Quarter, the 17th, at 6 Aft.
New Moon, the 25th, at 7 Aft.

Sun enters 22
22d. 8 h. 14 m.
Apparent Time.

1	C	7 S. aft. Tr. Lammas-Day	4	20	7	39	17	55	10 A	1
2	M			21		38		40	10	28
3	T			23		36		24	10	58
4	W			24		35		8	11	32
5	T			26		33	16	51	Morn.	
6	F	Transfiguration		27		32		34	0	17
7	S			29		30		17	1	7
8	C	8 Sunday after Trinity		31		28		00	2	9
9	M			33		26	15	43	3	17
10	T	St. Laurence		34		25		25	2	rises
11	W	Princess Augusta Born		36		23		7	8 A	4
12	T	Old Lammas-Day		38		21	14	49	8	31
13	F			39		20		31	8	57
14	S			41		18		13	9	22
15	C	9 S. after Trin. Assumpt.		43		16	13	54	9	47
16	M	[B. Virgin Mary		45		14		35	10	14
17	T			46		13		16	10	42
18	W			48		11	12	57	11	15
19	T			50		9		37	11	52
20	F			52		7		17	Morn.	
21	S			54		5	11	57	0	35
22	C	10 Sunday after Trinity		56		3		47	1	25
23	M			58		1		10	2	22
24	T	St. Bartholomew, Apostle	5	0	6	59	10	55	3	25
25	W			1		58		34	2	sets
26	T			3		56		13	7 A	20
27	F			5		54	9	52	7	47
28	S	St. Augustine.		7		52		31	8	12
29	C	11 S. aft. Trin. St. John		9		50		10	8	38
30	M	[Baptist Beheaded		11		48	8	48	9	7
31	T			13		46		27	9	40

Days	L. or D.	Day dec.	D. breaks	Sun East.	Tw. ends	C. bef. S.	7 Stars So.
1	15	18	1	17	1	24	7 0
6		2		33		44	6 55
11	14	44	41	2	2		50
16		38	2	7		20	45
21		10		25		35	39
26	13	51		44		50	34
							10 33
							13
							9 56
							18
							3 45
							2 37
							9
							1 34
							5 b 46
							19
							27
							8
							49
							30
							12

1756. September hath XXX Days.

First Quarter, the 1st, at 9 After.
Full Moon, the 8th, at 6 After.
Last Quarter, the 16th, at Noon.
New Moon, the 24th, at 7 Mor.

Sun enters 22
med. 4 h. 26 m.
Apparent Time.

1	W	Giles, Abbot	5	15	6	44	8	5	10	20
2	T	LONDON Burnt, in 1666.		16		43	7	43	11	7
3	F	[Q. S.		18		41		21		Morn.
4	S			20		39	6	59	0	3
5	C	12 Sunday after Trinity		22		37		37	1	7
6	M			24		35		14	2	18
7	T	Dog-Days End		26		33	5	52	3	31
8	W	Nativity of V. Mary		28		31		29		rises
9	T			30		29		6	7	A 6
10	F			32		27	4	43	7	30
11	S			34		25		19	7	56
12	C	13 Sunday after Trinity		36		23	5	57	8	22
13	M			38		21		34	8	50
14	T	Holy-Rood Day		40		19		11	9	20
15	W	Ember-Week		42		17	2	48	9	58
16	T			44		15		25	10	40
17	F	Lambert R.		46		13		1	11	26
18	S			48		11	1	38		Morn.
19	C	14 Sunday after Trinity		50		9		14	0	21
20	M			52		7	0	51	1	20
21	T	St. MATTHEW, Apostle		54		5		28	2	24
22	W			56		3		5	3	30
23	T			58		1	08	19	4	40
24	F		6	0	5	59		43		rises
25	S	Equal Day and Night		2		57	1	6	6	A 48
26	C	15 S. aft. Trin. Cyprion		4		55		30	7	18
27	M			6		53		53	7	50
28	T			8		51	2	17	8	29
29	W	St. MICHAEL		10		49		40	9	12
30	T			11		48	3	3	10	6

Days	L. of D.	D. dec.	D. break	Sun Rst.	Tw. ends	C. aft. S.	7 Stars So.
1	13 28	3 7	3 7	6 27	8 53	2 28	4 M. 5
6	10	25	21	22	39	2 6	32
11	12 50	45	34	14	26	3 48	14
16	30	5	45	8	15	5 32	3 56
21	22	25	56	2	4	7 15	39
26	50	45	4 7	5 56	7 53	8 48	21

1756. October hath XXXI Days.

First Quarter, the 1st, at 3 Mor.
 Full Moon, the 8th, at 7 Morn.
 Last Quarter, the 16th, at 8 Mor.
 New Moon, the 23d, at 7 After.
 First Quarter, 30th, at 10 Morn.

Sun enters in
 21d. 12 h. 1 m.
 Apparent Time.

1	F	<i>Rimigius, Bishop</i>	6	13	5	46	3	29	11	A	7
2	S		15			44		50		Morn.	
3	C	16 Sunday after Trinity	17			42	4	13	0		15
4	M		19			40		36	1		27
5	T		21			38	5	0	2		41
6	W	<i>Faith, Virgin and Martyr</i>	23			36		23	3		54
7	T		25			34		46	5		6
8	F		27			32	6	9		rises	
9	S	<i>St. Dennis</i>	29			30		32	6	A	30
10	C	17 S. aft. Tr. <i>Old Mich. D.</i>	31			28		54	6		57
11	M	<i>Op. and Camb. Terms</i>	33			26	7	17	7		27
12	T	[Begin	35			24		39	8		1
13	W	<i>Edward, King and Martyr</i>	37			22	8	2	8		40
14	T		39			20		24	9		25
15	F		41			18		46	10		15
16	S		43			16	9	8	11		13
17	C	18 S. aft. Tr. <i>Erhardus, V.</i>	45			14		30		Morn.	
18	M	<i>St. Luke, Evangelist</i>	47			12		52	0		25
19	T		49			10	10	14	1		21
20	W		51			8		36	2		29
21	T		53			6		58	3		40
22	F	<i>K. George II. Crown'd</i>	55			4	11	20	4		54
23	S		57			2		41		sets	
24	C	19 Sunday after Trinity	59			0	12	4	5	A	53
25	M	<i>Crispin</i>	7	1	4	58		22	6		30
26	T		3			56		42	7		12
27	W		5			54	13	2	8		6
28	T	<i>S. Simon and S. Jude, Ap.</i>	6			53		22	9		5
29	F		8			51		42	10		11
30	S		10			49	14	1	11		22
31	C	20 Sunday after Trinity	11			48		21		Morn.	

Days	L. of	Day	Day dec.	D. breaks	Sun East	Tw. ends	C. aft. S.	7 Stars So.							
1	11	32	5	3	4	19	5	50	7	41	10	35	3	M	3
6		22		23		30		44		39		12		2	43
11	10	54		43		40		37		29		13	24		28
16		32	6	3		50		31		10		14	41		7
21		12		23		59		25		1		15	23	1	49
26	9	52		43	5	8		19	6	52		15	57		23

1756. November hath XXX Days.

Full Moon, the 6th. at 10 After.
 Last Quarter, the 15th. at 3 Mor.
 New Moon, the 22d. at 5 Mor.
 First Quarter, the 28th. at 9 Aft.

Sun enters ♌
 21st, 7 h. 52 m.
 Apparent Time.

1	M	All Saints	7	13	4	46	14	41	oM	35
2	T	Ps. of Orange B. All Souls	15		44		15	0	1	47
3	W	On the mor. of All Souls,	17		42		19		2	58
4	T	[1 Ret	19		40		37		4	6
5	F	Powder-Plot, 1605, O. S.	20		39		55		5	15
6	S	Michaelmas Term Begins	22		37	16	13		)	rises
7	C	21 S. aft. Trin. Pr. Hen.	23		36		31		5	31
8	M	[Fred. Born	25		34		48		6	3
9	T	Lord Mayor's Day at Lond.	27		32	17	4		6	37
10	W	King GEORGE. II. Born	29		30		23		7	20
11	T	St. Martin	30		29		39		8	8
12	F	On the mor. of St. Martin,	31		28		55		9	1
13	S	Britius, Bishop. [2 Ret.	33		26	18	11		9	59
14	C	22 Sunday after Trinity	35		24		27		11	1
15	M	Macbutus, Bishop	36		23		42		Morn.	
16	T		37		22		57		0	7
17	W	Hugh, Bishop of Lincoln	39		20	19	12		1	15
18	T	In 8 days of St. Martin,	41		18		26		2	25
19	F	[3 Ret.	43		16		40		3	40
20	S	Edmund, King and Martyr	44		15		54		4	57
21	C	23 Sunday after Trinity	45		14	20	8		6	10
22	M	Cecilia. Old Martinmas Day	47		12		20		)	sets
23	T	St. Clement	48		11		32		5	A 59
24	W		51		10		44		6	48
25	T	Fr. Wil. Hen. Bo. In 15	51		9		55		7	53
26	F	[days of S. Martin, 4 Ret.	52		8	21	7		9	4
27	S		53		7		18		10	17
28	C	Advent Sunday	54		6		28		11	30
29	M	Michaelmas Term Ends	55		4		38		Morn.	
30	T	S. And. Ps. Dow. Wales Bo.	57		3		48		0	42

Days	L. of Day.	Day dec.	D. breaks	Sun East.	Tw. ends	C. aft. S.	7 Stars So									
1	9	32	7	3	5	17	5	13	6	43	16	a	14	1	M	7
6		14		21		24		7		36		6		0		47
11	8	58		38		30		2		30		15	38			27
16		43		52		36	4	57		24		14	48			6
21		28	8	7		43		53		17		13	38	11		41
26		15		15		49		49		11		12	8			20

1756. December hath XXXI Days.

Full Moon, the 6th, at 4 After.
 Last Quarter, the 14th, at 8 Aft.
 New Moon, the 21st, at 4 After.
 First Quarter, 28th, at 10 Morn.

See entries w
 20th. 19 h. 56 m.
 Apparent Time.

1	W		7	58	4	21	58	1	M 50
2	T			59		1	22	2	58
3	F		8	0	0		15	4	6
4	S	Barbara.		1	3	59	23	5	10
5	C	2 Sunday in Advent		2		58	30	6	14
6	M	Nicholas, Bishop		3		57	37	7	18
7	T			3		57	42	5	9
8	W			4		56	49	5	53
9	T			5		55	56	6	44
10	F			5		55	23	1	7
11	S			6		54	6	8	40
12	C	3 Sunday in Advent		6		54	11	9	42
13	M	Lary, Virg. and Martyr		7		53	15	10	48
14	T			7		53	18	11	55
15	W	Ember Week		7		53	21		Morn.
16	T			8		52	23	1	7
17	F	Ofops and Camb. Terms		8		52	25	2	19
18	S	[End		8		52	27	3	35
19	C	4 Sunday in Advent		8		52	28	4	58
20	M			8		52	29	6	10
21	T	St. Thomas. Shortest Day		8		52	29	7	24
22	W			8		52	28	8	set
23	T			8		52	27	6	A 28
24	F			8		52	25	7	45
25	S	CHRIST-MASS-DAY		7		53	23	9	2
26	C	St. STEPHEN. 1 S. a ft.		7		53	21	10	16
27	M	St. JOHN. [Christm as		7		53	18	11	26
28	T	Innocents		6		54	15		Morn.
29	W			6		54	11	0	38
30	T			5		55	7	1	45
31	F	Sylveſter		5		55	3	2	47

Days	L. of D.	D. dec.	D. breaks	Sun East.	Tw. ends	C. aft. S.	7 Stars So.
1	8 3	8 32	5 55	4 46	6 5	10 a 19	10 A 59
6	7 54	41	58	43	2	8 15	37
11	47	48	59	41	1	5 58	15
16	43	52	6 0	40	0	3 35	9 53
21	43	52	1	40	5 59	1 4	31
26	45	Inc. 2	0	40	6 0	1 b 27	9

A CHRONOLOGY of Remarkable Events.

Y. of Christ	Years since	Y. of Christ	Years since
1600	KING Charles I. Born — 156	1702	K. Wil. died, & Q. Anne suc. 54
1603	Q. Elizabeth died, and King James succeeded — 153	1702	War against France declared — 54
1603	A great Plague in London — 153	1703	A terrible Wind, Nov. 26 — 53
1605	The Popish Gun-powd. Plot 151	1704	Gibraltar taken — — 52
1625	K. James died, & K. Ch. suc. 131	1704	The French beat at Hochstet 52
1641	The bloody Irish Massacre 115	1706	The French beat at Ramellin 50
1642	Edgehill Fight — — 114	1707	England and Scotland united 49
1643	Newbury Fight — — 113	1708	The French beat at Oudenard 48
1644	Marston-Moor Fight — 112	1709	The French beat at Blaraguis 47
1645	The Battle of Naseby — 111	1713	Peace with France Proclaim'd 45
1649	King Charles I. Beheaded 107	1714	Queen Anne died, and King George I. succeeded — 45
1651	The Fight of Worcester — 105	1716	A Rebellion in the North — 40
1662	Oliver Cromwell died — — 98	1716	A very great Frost — — 40
1660	King Charles II. Restored — 96	1727	King George I. Died, and King George II. Succeeded — 29
1665	The last great Plague in London whereof died 68,386 Persons 91	1730	The last Great Frost — — 17
1666	The great Fire in London — 90	1739	War against Spain declared — 17
1685	King Charles II. Died, and King James II. Crowned 71	1742	A great Comet appeared — 14
1685	Duke of Monmouth Beheaded 71	1744	War against France declared 12
1688	Prince of Orange Landed — 68	1745	A Rebellion in Scotland — 11
1688	King James II. Abdicated — 68	1748	A General Peace — — 8
1689	K. Wil. and Q. Mary crown'd 67	1752	The New Style first used in England — — — 4

BIRTH-DAYS of the ROYAL-FAMILY of Great-Britain. (New Style.)

KING GEORGE II. Born, } 1683 November 9 — — }	Princess Augusta Born, Aug. 11, 1737
Prince of Wales Born, June 4, 1728	Prince Edward Born, March 25, 1739
Pr. of Orange Born, Nov. 2, 1709	Princess Elizabeth Born, Jan. 10, 1740
Princess Amelia Born, June 10, 1711	Prince William Henry, Nov. 25, 1743
Princess Caroline Born, June 10, 1713	Prince Henry Frederick, Nov. 7, 1745
Pr. Dow. of Wales Bo. Nov. 30, 1719	Princess Louisa Anne, March 19, 1749
Duke of Cumberland B. April 26, 1721	Prince Fred. William, May 24, 1750
Mary, Prs. of Hess, Bo. March 5, 1722	Prs. Caroline Matilda, July 22, 1751

YEARS of the Birth of the Principal Sovereign PRINCES in EUROPE.

Francis, Emp. of Germ. Born, 1708	Emanuel, King of Portugal, Born, 1714
Maria Theresa, Emp. Qu-en, 1717	Chs. Frederick, King of Prussia, 1712
Elizabeth, Empress of Russia. Bo. 1701	Fred. Augustus, King of Poland, 1696
Leopold XV. King of France, Born, 1710	Chs. Emanuel, King of Sardinia, 1702
Ferdinand, King of Spain, Born, 1713	Don Carlos, K. of the two Sicilies, 1716
Adolphus Fred. King of Sweden, 1710	Benedict XIV. Pope, Born, — 1675
Frederick, King of Denmark, Bo. 1723	Osman III. Grand Signior, Born, 1698

ANSWERS to the **ÆNIGMA'S** in the last **YEAR'S DIARY.**

I. 370. TABLE-LINEN.

II. 371. *The Flower* NARCISSUS.

III. 372. BILLIARD BALLS.

IV. 373. *The Impression of a*
SEAL.

V. 374. A PERUKE.

VI. 375. SNORING.

VII. 376. A PINFOLD.

VIII. 377. WIT, or HEARING.

IX. 378. *A PORTRAIT-PAINT-*
ING.

X. 379. BARLEY, or MALT.

XI. 380. *ASNAIL in its SHELL,*
Prize. *A HAM.*

ANSWER to the *Prize Ænigma*, by **MR. JOS. BELL**,
the famous *Barber of Ebechester*.

To my Shop came a *Spark* last Week:

Quoth I, *John* shall I cap you? speak.

"Here's what will cap you too," he cries;

And so he turned to your *Prize*:

"I'll stake a *Hog*"—The *Wager's* taken.

Now, pray, Sir, shall he save his **BACON**?

Answer'd by ENIGMA.

All Men allow your *Prize* good *Picking*;

The **HAM** we've found, but where's the *Chicken*?

The same answer'd by Miss SALLEY WEST.

To find out your **HAM**, has much puzzl'd my *Brains*;

But I hope in Return, *Dinner's* Tea, for my *Palm*.

Answer'd by Mr. RALPH HULSE.

What *Moor* prepar'd to grace the **LADIES' Treat**;

Good *Christians* like, but wicked *Jews* won't eat.

Answer'd by Mr. ISAAC TARRATT,

To the Author of the **DIARY**, on his Entertainment at
a Friend's, on **NEW-YEAR'S-DAY.**

MY Friend, this Day, did us regale
With **HAM** and *Chickens*,
Ducks and Teal;

A *Chine* of Mutton, not unpleasant,
A Brace of Woodcocks and a Pheasant;
But first, we'd Soup (o'er which we'd
Grace)

A Dish of Fish, in which were Plaice,
Some Maide, some Flounders and fresh
Whiting, [delight in:
And Sauce made rich; which most

A Hunting Pudding and Mince-Pies,
And Tarts of various Sorts and Size.
The Cloth withdrawn, and Thanks
return'd.

To different Tables we adjourn'd;
Some to Smoaking, some to Drink-
ing,

Some to Cards, and I to Thinking;
Sincerely wishing, by St. *Luce*,
Success to you, Friend *Marmaduke*.

All the ÆNIGMAS answered by Mr. *Anth. Moore*
in Praise of the Countryman's Life.

HOW calm and pleasing in the early Day !
Thro' Groves, and Fields, and Dew-bright Walks to stray ;
Where Shrubs and HYACINTHS with Verdure crow'd, 2
And Flowers of various Hpe bedeck the Ground ;
Happy the Man who void of Care and Strife
Thus reaps the Pleasures of a Country Life ;
His Manners pure, not form'd by LEARNING's Rules, 3
Or Maxims fetch'd from Philosophic Schools :
Knotty and abstruse Points rack not his Brain ;
PORTRAITS and SEALS, he scarce knows what they mean ; 9, 4
BILL'ARDS, and Routs, and Drums he never saw, 3
Nor heard at wrangling Bars perverted Law.
Save but his Kine from POUNDS, from Floods his GRAIN, 7, 10
Nought anxious he what Kings or Monarchs reign.
He envies not the Dainties of the Great,
Give him good GAMMON, it is Bliss complete. 12
Toil tasteful makes the Fare on which he feeds ;
No Waiter wants he, and no CLOTH he needs : 1
Stretch'd on the verdant Turf serene he lies,
SNORES loud, and grateful Slumbers seal his Eyes. 6
While idle Crouds to noisy Scenes resort,
Throng the full Mall, or bluster at a Court ;
While Fops strut insignificantly big,
With harmless Sword, lac'd Coat, and powder'd Wre, 5
Who bear, like SNAILS, upon their Back, in Dress, 24
Houses and Lands, and all that they possess ;
Lord of himself, and undisturb'd with Noise,
The Countryman his peaceful Realm enjoys :
Health and Content reward his temperate Meals ;
And the round Year with useful Toil he fills.

All the Ænigmas answer'd by *Calia*, to her intended Husband.

Strepbon, in all Affairs my Aim shall be
To join, with Elegance, Oeconomy.
Tasteless and loathsome proves the rich Repast,
Unless clean TABLE LINEN grace the Feast. 2
Instead of Gems, NARCISSUS, once betray'd 2
By his own Charms, shall come to Beauty's aid.
Instead of mixing with the gaming Crew,
An Hour at BILLIARDS will delight with you. 3
As on my Heart, so on my Lips a SEAL 4
Be ever fix'd, no Secrets to reveal.
The Fop to Church repairs, dress'd out with Care,
In powder'd PERUKE, there to SNOORE or stare : 5, 6
Far other be my Task ; Heav'n to appease,
And beg for *Strepbon* Happiness and Ease ;
Far from the Verge of wrangling Courts, where LAW } 7
Robs her own Vot'ries, and with Iron Claw
Gluts with the Orphan's Bread her all-devouring Maw. }

But still there yet remains one Task behind,
 T' adorn with **LEARNING**, and improve the Mind : 8
 All *Form*, without her Aid, is dull and faint,
 A living *Statue* or fine Piece of **PAINT**. 9
 Be still my Aim your Pleasure to extend,
 And meet with open Heart your cheerful Friend :
 Pleas'd when in decent Mirth your Ev'nings pass,
 And Grapes and **BARLEY** crown the sparkling Glasse. 10
 The Chace's Joy be yours, the op'ning Hound,
 The bounding Steed, and Horn's enliv'ning Sound :
 But yet reflect, if Men for Pleasure roam,
 That Wives, like **SNAILS**, wife Nature form'd for Home ; 11
 Then give me leave to dine by One or Two,
 Nor think it hard ; I'll still provide for you
 Roast Beef, or **HAM**, or Tongue, the Hunter's constant due. } Prize.

All the Ænigmas answered by Mr. *Benj. Lydal*.

The fleeting Year its Race has run ;	Yourself an empty Shade,	
Another has it's Course begun,	Resume your Senses once again,	
And rolls continual on ;	Be METAMORPHOS'D † into Men, ‡	
Tho' seeming slow as creeping	As first by Nature made.	
SNAIL , 11	Ye jolly Sons of <i>Bacchus</i> , hear,	
Or tedious as the hated GOAL * 7	Who drown your SNORING Lives in	
'Twill soon, alas ! be gone.	BEE , 6. 10	
Ye, who at Cards or BILLIARDS play,	And feast on HAMS Repast, Prize.	
Who of the <i>Weak</i> still make a prey,	REFLECT † on this, and sober be, 9	
And sober Precepts hate,	Old Time's the great devouring Sea	
Remember, spight of all your ARTS , 8	Where all must plunge at last.	
And close apply it to your Hearts,	But who can all Life's Scenes display ?	
This Year may SEAL your Fate. 4	Whoever thinks to trace the Way,	
Ye Fops and Beaux, whose weighty	E'er he begins, is lost :	
Care	Then let Mankind say what they	
Is powder'd Wigs and LINEN fair, 5. 1.	will,	
	'Tis Life's the greatest Riddle still,	
	By endless Windings crost.	
* The Pound or Pinfold. † Alluding to Narcissus. ‡ Reflection in a Glasse.		

All the Ænigmas answered by Mr. *James Robinson*.

To banish **SLEEP** I frequent Rambles take, 6 Snoring.
 And range the Town, still for Amusement's sake :
 When slowly, like a **SNAIL**, I move along, 11
 To gaze at Objects and the busy Throng :
 Promisc'ous Scenes here open to the Sight,
 While *these* the Soul depress, and *those* delight.
 Now *some* look gay, transported with Success ;
 While *others* wear the **PICTURE** of Distress. 9
 There, gorg'd with **HAM** and **BARLEY**'s noxious Juice, Prize, 10
 A **WIT**ling reels, of Wealth and Life profuse : 8
 Here, a Compound of Dulness, Pride and Noise, 7
 Bedawbed o'er with Lace, attracts our Eyes :
 In smart **TOWPER** and finest **LINEN** dress, 5, 1
 A gaudy Plume ; with **FLOWERS** in his Breast. 2
 Undone

Undone by Affignations, BALLS, and Play, 4
He SEALS his Substance and his Soul away. 3

All Ænigmas answered by Mr. *Jos. Lord*, on Rural Diversions.

When softer Seasons wait the genial Hours,
To court *Festivity* with all her Pow'rs,
How has my raptur'd Soul, Oh! Charming Scene!
Pursu'd the pleasing Gambols on the Green.
When blooming Maids, with sweetest FLOWERS crown'd, 2
Eager for Sports, the tardy Youth impound: 7
In vain the WIG, or NeckCLOTH claims his Stay; 5, 1
Th' impatient fair Ones hurry him away:
To verdant Plains the happy Train advance;
There join the Measures of the sprightly Dance.
Here's no affected Brow, nor Visage pale,
But rosy Health, that needs no PAINTED SNAIL. 9, 11
Dick smiles on *Molly*; she to SEAL his Bliss, 4
With feign'd Reluctance, yields a ravish'd Kiss;
Yet sweetly blushing, anxious to conceal
Those lovely BALLS which courtly Belles reveal. 3
Now, tir'd with active Sports, to *Jean's* they steer,
(A Gossip noted much for good MALT Beer:) 10
Where, tho' no sav'ry HAM's before them plac'd, *Prize.*
Yet *Pies*, and *Cheesecakes* sweet, regale the Taste:
Whilst Love and Friendship, Joy and blithsome Grace
Dilate the Heart and smile in ev'ry Face:
'Till Some, injurious to the sparkling *Fair*,
Oh! Wretches *Sots*! sink SNOORING in their Chair. 8, 6

All the Ænigmas answered by *Oedipus Bathoniensis*, to Miss
Lucy Squeamish, on the Choice of a Husband.

Of the Man you wou'd wed, be this the PORTRAITURE -- 9
No Coxcomb NARCISSUS, effeminate Creature! 2
Fribble never was form'd Women's Hearts to trepan;
By his LINEN and WIG you may measure your Man. --- 1, 5
If wou'd by a Gamester, beware of a Curse!
Like the BILLIARDS, you'll find his sole Aim's at your Purse: 3
He'll reel home at Day-break, and SNORE at your Ear, 6
Then start from the Dream of a PILLORY near. --- 7
But if WIT, solid Sense, and Good-Nature combin'd 8
Meet in One, who by Converse and Books is refin'd,
He's your Man -- SEAL your Vows -- Most faithful you'll find him; 4
And he'll leave, like the SNAIL, a Lustre behind him; 11
Ne'er regard the Outside -- with his Mind you'll be taken, }
And for ever be happy (or I am mistaken) }
Be his Hue brown as BARLEY or GAMMON of BACON. } 10, *Prize.*

All the Ænigmas answer'd by *Tom Jones*; to a Friend on
being invited to sup with him.

I found by your Billet, on breaking the SEAL, 4
You invite me this Night to partake of a Meal;
B 2 When

When with HAM finely cur'd, and MALT-Liquor that's sound, 12, 10
 Set on clean TABLE-LINEN, your Board shall be crown'd : 1
 You complain, *that Old Time*, tho' reported to fly,
Seems to creep, like a SNAIL, when no Company's nigh ; 11
 That your Friend most distinguish'd for LEARNING is dead ; 8
 That old Nessor sits SNOARING, NARCISSUS is fled : 6, 2
 How your BILLIARDS grow dusty and quite out of Use. 3
 Thus a PORTRAIT you draw ; and in Case I refuse, 9
 With Lob's-POUND may hold me, so horrid your Spight ! 7
 But I'll get my WIG comb'd and e'en see you To-night. 5

All the Ænigmas answer'd (as they stand in Order) by Mr. Rob.
Marsh.

*A Napkin, Flower, Balls, and a Seal,
 A Wig, a Snorer, and a Pound,
 Wisdom, a Picture, and a Snail,
 And Ham, your Riddles all expound.*

All the Ænigmas answer'd by W. L.

*Linen, Narcissus, Bill'ards, Seal,
 Wig, Snoring, Pinfold, and a Snail,
 Learning, a Picture, Ham, and Barley,
 Answer all your Riddles fairly.*

All the Ænigmas answered by a Friend, to the Author of the
 Diary, on being invited to become a Contributor.

You wish, my Friend, to have me write ;
 And I've comply'd, but in mere spite :
 For who, in these dull smatt'ring Times,
 Wou'd Problems solve, or deal in Rhimes ?
 When solemn Farce sound Sense supplies,
 And Genius yields to Show and Noise :
 When modest Worth makes no IMPRESSION,
 And to know much, is a Transgression : 4
 When Science droops, and None regard ;
 When useful Arts meet no Reward :
 But each dull SOT * and prim NARCISSUS 10, 2
 With ready Gibes affects to hiss us. ---
 As to myself, my Fund's but low ;
 A little Algebra --- or so,
 Is all I boast --- but let that pass ---
 I hate, you know, a blust'ring Ass ;
 And such these Di'ries I have seen in,
 And some whose Jokes much need clean LINEN : 1
 Dull SNORING Sots, that give Offence, 6
 By tasteless Jests †, to common Sense.
 Whose PORTRAIT, wou'd you it devise, 9
 Is a COMPOUND of Froth and Noise. 7

* Alluding to Malt-Liquor. † See the Prize Question for 1752, and the Answer to it.

Some

Some boldly steal from the Old Store,
 And give us what we had before:
 Again the same low Things we've seen }
 In Di'ry, Pamphlet, Magazine;
 Tho' they in Nature ne'er have been * }
 But hold, you cry! 'tis downright Spight!
 "If F---s will print what Dunces write,
 "Must they who've Science, Wit, and Spirit,
 "Be stigmatiz'd for want of Merit?
 "If blust'ring H---b is still a Fool,
 "P--- a slow REPTILE, D--- a dull,
 "Say, must a Hopper, Nabb, or Moore,
 "Or Ormishaw, be dull therefore?
 "'Cause powder'd Fops strut and look big,
 "Must all be Fools that wear a Wig?
 "If Hogs and Asses will press on,
 "Like BALLS in Motion; you, nor none,
 "'Cause such persist in Nature's spite,
 "Shou'd rashly censure all who write."
 'Tis granted, Sir, nor wou'd I do it;
 I honour Artists, love a Poet:
 But such vile stuff, of late I've seen,
 As really has provok'd my Spleen.

3

11

5
Prize.

3

* Alluding to those forc'd, and patch'd up Problems, that never can occur in Practice.

The last Piece, tho' somewhat Satyrical, we could not (we are sorry to say it) look upon as improper; being convinc'd (to our great Concern) that there is too much Truth in it: And it is not without a Degree of Indignation that we see, every Year, Some who would obtrude upon us, at their own, what they have copied from former Diaries and the most common Authors.---But, tho' we cannot help expressing some Resentment against those who, to gratify a groveling Ambition, would weakly and wantonly expose us to publick Censure, yet we should be exceeding sorry to deter modest Merit by any thing that looks like Ill-nature.

Several other Answers to the Enigmas, besides those inserted, have been received; from Mrs. H. Gill; Mrs. Grace Tetlow; Emilia; Miss Ann Rickabey; Mr. Ralph Hulse; Mr. H. Season; Mr. S. Bamfield; Mr. Lionel Charlton; Mr. E. Robinson; Mr. T. Drury; Mr. Rich. Shillito; Mr. Rich. Morris; Mr. S. Handford; Mr. Cha. Underwood; Mr. James Taylor; Mr. Jos. Briscall; Mr. W. Bayley; Mr. W. Litson; Mr. T. Lampit; &c. &c. many of which might claim a Place in this Diary, could we possibly find Room for them.

ANSWERS to the QUERIES in the last-Year's Diary.

Quære I. answered by Mr. Henry Season of Brookham, Wilts.

OF all the Vices, no one (in my Opinion) has been productive of more fatal Consequences to Mankind than Avarice. The Apostle

himself has declared, that *the Love of Money is the Root of all Evil*. From whence proceed Breach of Friendship, Injustice, Treasons, Murders, the Subversion of States and Kingdoms, with a Thousand other dreadful Enormities, to say nothing of the horrid Sting of Conscience.

Our ingenious Correspondent Mr. *J. Tapner* is of the same Opinion, ---He observes, that, though *Love*, ill repaid, renders Many *unhappy*, and *Ambition*, zealously pursued, plunges the Pursuers into great Disquietness of Mind, and is often productive of very direful Effects, yet *Avarice* seems to be the greater Evil, as Those possessed with this infamous Vice seldom (if ever) enjoy the least true Happiness. The avaritious Man grudges even his own daily Sustainance: Envy preys upon his Vitals: The Prosperity of his Neighbour is a Dart which pierces him through. He is the most inveterate Enemy to that most amiable Virtue, CHARITY; and will become unjust, or even perjured, for the sake of what, when obtained, he has not the Spirit to enjoy.

Enira thinks that *Ambition* and *Avarice* spring both from the same Source, or that the latter is but a Species of the former, founded on a desire of appearing considerable, by accumulated Wealth, in the Eyes of Mankind. — Of which Opinion are Some Others. — Mr. *Bamfield* affirms, that *Ambition* has contributed most to render Mankind unhappy; and produces some very good Arguments in support of this Opinion.

Quære II. answered by Mr. *J. Tapner*.

It conduceth much to the Happiness of Mankind, that future Events are hid from their Knowledge. It is enough that we bear the Evils allotted to us at the appointed Time, without anticipating our own Misfortunes and groaning under a Load of frightful Apprehensions, which the Fore-knowledge of those Evils must necessarily lay us under — Could we, even, foreknow, or be assured of our future Prosperity, we should be reaching after it with such Anxiety, as would render our present State unhappy. — Discontent and Ignorance (as *Enira* well observes) are the principal Causes why the illiterate and inferior Class of Mankind are desirous to be informed about *that*, which, if possible to be known, would increase their Uneasiness.

Quære III. answered by Mr. *Anth. Moore*.

Because the Man is the Head of the Woman: and where should the Horns grow but on the Head?

Mr. *Tapner* answers it almost in the very same Words --- *Enira* thinks that Horns might be of Use to the Man, to push off his Wife's Gallants, and guard his House.

Quære IV. answered by *Enira*.

As *Death* is a total Deprivation of the Animal Functions, what comes nearest to *that*, may, most properly, be called its Image: Sleep unbraces the Nerves, locks up the Senses, and in a Manner suspends our Being: Our Ideas (if any) are then broken and confused, so that we can have no Perception of that Succession by which our Duration is measured.

THE PRIZE QUÆRE, answered by *A. M.*

The Phenomenon of shooting Stars, is undoubtedly, in Substance, electrical Fire. And as it has been proved by Experiment*, that clear

* See the 48 Vol. of Philos. Trans.

Air may be in a positive or negative State of Electricity, the Appearance is accounted for, by a small Discharge of that Fire from Air that abounds with it, to Air that has less than its natural Quantity; which happens, when there is but little Moisture in the Atmosphere.

NEW ÆNIGMAS to be ANSWERED in the next
YEAR'S DIARY.

I. Ænigma 381. by Mr. *Auth. Moore.*

LADIES, with your Permission I appear;
But from my Pow'r you need no Danger fear:
For know, tho' *big I look*, I'm in my Nature
A gentle, harmless, inoffensive Creature.

Almost to *Noah* I could backward trace
Some scatter'd Kindred of our Antient Race;
But yet our Pedigree did never run
In lineal Descent, from Sire to Son.
Once we were few, for Nature form'd us *then*,
But since we're much increas'd by Art of Men.
Semiramis, 'tis said, th' *Affyrian* Dame,
By Art did first our *second Being* frame;
The Loss we suffer'd then was so severe,
If told, you scarce wou'd read without a Tear;
For of our *lawful Right* we were depriv'd,
And by fell Tyrants plunder'd and deceiv'd.

In *Eastern Climes* our chief Abode has been;
But *Afric's* Realms, and *Europe's* Courts we've seen:
Much we in *France* and *Italy* abound;
In *Britain* too full often we are found.

Some of our Kind, but under diff'rent Names,
Are seen on *Isis*, and thy Banks, Oh! *Thames!*
O'er all the Country swarm the num'rous Race,
Graze with the Herds, and follow in the Chase.

Orpheus of Old, as Poets often tell,
By Musick fetch'd *Euridice* from Hell,
But *Orpheus'* Strains, harmonious and divine,
Lose half their Melody, compar'd with mine.

Ladies! What I am not I oft appear,
And thus deceive You by the Garb I wear;
Like Man erect, upon two Legs I walk,
Like you I smile---like you too---I can talk:
Something, but what I am, I scarce can tell,
Ladies,---will you the Mystery reveal?

II. Ænigma 382. by Mr. *J. Pickburn.*

————— *quid me perferre patique*
Indignum coges?

Horace.

Ye lovely Nymphs whose Shape and Mien	Whose Charms with universal Sway Can make the stubborn World obey.
Excel the fair <i>Idalian</i> Queen;	B 4 Your

Your faithful Slave I long have been,
Nor fail, tho' now grown poor and mean.

A spotless Form I once possess'd,
As fair as *Sylvia's* snowy Breast:
Sylvia, who thought it no disgrace
To yield herself to my Embrace;
Till Age, frail Beauty's deadly Foe,
Defac'd me: Now enfeebled too
With Sprains, Contusions, Wounds
and Scars,

Thro' which the Flesh and Blood
appears;

A direful Change pervades my Frame,
From whence I take another Name:
Yet mindful of my former State,
Still on my Female Friends I wait;

What they impose content I bear,
Tho' made a Kind of Scavenger.
By some, who rule with rigid sway,
I'm teas'd, and harass'd thrice a
Day; [dwell,
But gentler Nymphs with whom I
If once a Week I serve them, well
Are satisfy'd, and would not have
An useful Servant made a Slave.
Debates I judge, and doubtful Strife,
Betwixt the jarring Man and Wife;
If he forsake his proper Sphere,
In her Concerns to interfere,
I'm like a waving Flag display'd,
To guard the Rights he would invade;
Hung as a Signal to express
Ridiculous Officiousness.

III. Ænigma 383. by Mr. Tim. Nabb.

Two various Parts do me compose,
Which both from Mother Earth arose;
In Air high the one is found,
For t' other look you under Ground.
My Shape, so odd, what Wit can tell?
What need describe? I'm known so well.

My Use and Virtues then attend,
Who always am the Poor Man's
Friend.

My Help to Diligence is much,
And to the Lazy I'm a Crutch;
I stand the Living in good Stead,
And piously attend the Dead.
I Pleasure too and Profit yield
And dextrous trim the teeming
Field.

Think not, ye Fair, my Boasts are
vain,
Herculean Labours I sustain;
Nor hasty yet, my Meanness scorn,
Tho' I to be a Drudge was born;
For tho' so low and mean am I,
I've Brethren keep best Company;
Are much care's'd by Duke and
Lord,
And sway with some at Council
Board.
To Kings superior one is seen
In single Combat on the Green;
On Embassies is often sent,
With hostile or with kind Intent.
How me a State so low beset,
Who've such Relations, Ladies, tell.

IV. Ænigma 384. by Mr. Chr. Mason.

I am, what shall I say? to say it well,
Whether the Offspring of this Earth or Hell;
Whether designed or by accident,
Kind Reader, judge, then speak thy Sentiment.
Four thousand Years, or more, as Writers say,
Are now elaps'd, since first I did display
My ruthless Face, when shameful were disclos'd
My wretched Deeds, and instantly expos'd.
Where I usurp with arbitrary Sway,
I Traytor-like usurping Pow'r display;
If not subdu'd, the whole I soon distress,
The Sov'reign blind, the Subjects I oppress,

Make

Make 'em rebel against their lawful Prince,
 His Laws subvert, his Sov'reign Pow'r evince.
 What Prudence shuns I hourly propagate ;
 O'er some exult with Insolence elate,
 Whom I reduce, make destitute, forlorn ;
 No Pity's shewn, but mostly Public Scorn !
 Some with Regret their Hardships fore complain ;
 And yet e'er long they're fetter'd in my Chain !
 Some, who i' th' Morn avow they do me hate,
 By th' Ev'ning-Tide again I captivate.
 What Providence for human Good design'd,
 I make my Bait for to ensnare Mankind ;
 By subtle Art I can with Ease transmute,
 Gold into Dross, a Man into a Brute.
 By all the Great, the Good, of me appriz'd,
 I'm shun'd, abhor'd, indignant am despis'd :
 Shou'd I express half my opprobrious Ill,
 'Twould far more Volumes than did *Salmon* fill.
 I've said enough, no farther length I'll run,
 Say what I am, despise me when you've done.

V. Ænigma 385. by Mr. D. Davis.

My Looks are innocent, like yours, ye Fair,
 Like you, in Company I neat appear ;
 Like you, I'm sought for, valu'd and caress'd,
 Like you, to ev'ry Man, a welcome Guest :
 The Grave, the Brave, the Niggard, and the Beau
 My Favours taste, and my Perfections know.
 The Ladies too, nor think they do amiss,
 Permit me oft their ruby Lips to kiss ;
 I then respect'd am by one and all,
 But Oh ! sad Fate ! if I should chance to fall.
 When thus belov'd, when thus caress'd at Home,
 Who would to distant, unknown Countries roam ?
 Yet with undaunted *Anson* I did sail,
 Thro' all the Dangers, and each stormy Gale ;
 But I assist'd not to quell their Fears,
 For one proud Wave would melt me into Tears :
 Yet when kind Heav'n had bid the Storm to cease,
 My Company wou'd in the Cabin please.
 Left you, ye Fair, should think th' Ænigma dark,
 Take one Hint more--and you'll not miss the Mark--
 Tho' once a Monument of Infamy,
 The *Saints* themselves have been compar'd to me.

VI. Ænigma 386. by Miss Polly Walker.

Ladies, a Band of Brothers, claim your View ;
 Born at one Birth, and instantaneous too.
 Yet we, like other Beings, undergo
 In our Completion various Scenes of Woe.
 Vulcanian Wrath our tender Frames abide,
 And scorching Engines o'er our Bodies slide ;

Var'ous as *Harlequin* in *Drury Lane*,
 Our Habits differ as the Fashions reign,
 But ev'ry Brotherhood one Dye retain. }
 Sometimes the Robes of Innocence we wear,
 In Red, or Black, or what you please, appear;
 Oft we in Gold resplendent walk the Mall,
 Or cas'd in Silver glitter at a Ball.
 We're priz'd by Men of high and low Degree,
 From Peasant in his Cott, to Majesty.
 Ye Ladies fair, you likewise we befriend;
 And, Neighbours to the Star, his Grace attend.

VII. Ænigma 387. by Miss *Ann Evelyn*.

I was born in a Forest, and wear a green Head;
 And with *Greenbeards* am compass'd full oft,
 Some younger, some older,
 Some sly and some bolder,
 Some harder, and some very soft.
 As various Specks on my Face do appear,
 Of different Colours and Shapes,
 So intent on the Matter,
 Some grin and some chatter,
 Like a Parcel of Monkeys and Apes.
 By Nature I'm harmless, but not so by Art;
 The Art not my own but my Neighbours:
 If you suffer by me,
 Your own Fault it must be,
 And may e'en take your Pains for your Labours.

VIII. Ænigma 388. by *Emilia*:

From the Strong and the Weak our Being takes Rise;
 And the smaller our Parents, the higher our Price.
 Our Uses are great at a Ball or a Play;
 And the talkative *Fair* will our Worth oft display
 For want of a Subject: But, such are their Ways,
 We're sure to be tortur'd to merit their Praise:
 Yet in return for such Treatment, if *Proverbs* say true,
 We embellish their Charms and their Ornaments too.

IX. Ænigma 389. by Mr. *S. Hodgkin*.

For Peace and good Behaviour of Mankind
 We by the Commonwealth were first design'd;
 And by Direction of the Magistrates,
 We execute their Ends to quell Debates.
 But scandalous and hateful is the Cause
 That brings a Captive to our ruthless Jaws.

X. Ænigma 390. by Mr. *Ralph Hulse*.

From me, their nobler Talents Men derive,
 Knowledge to act, and Cunning to contrive.
 The deepest Plots and Stratagems of War
 Have been committed to my faithful Care;

Yet Peace I favour and support the Law,
To punish Crimes, and Villains keep in Awe.
Without my Aid, the *Poet*, nor *Divine*,
Nor smooth-tongu'd *Orator* could hope to *shine*.
I warn the watchful *Shepherds* of the Plain
To guard their Flocks from boist'rous Storms of Rain:
I teach the *Seeds-man* how to plow and sow;
And when it proper is to reap, or mow.
By me the downy *Eunuch* softly sings;
I sweetest Notes compose to sounding Strings.
Ye gentle Readers, and ye blooming Fair,
Let me at all Times be your chiefest Care:
Observe my Dictates, and you need not doubt,
But, guided still by me, you'll find me out.

XI. Ænigma 391. by *Enira*.

Transported from my Native Home, Thro' diff'rent Climes I'm doom'd to roam. I travel far, for Reputation, And take a Name from ev'ry Nation. It much my Credit does enhance, When I am known to come from <i>France</i> , When first in <i>Britain</i> I appear, My Native Livery I wear; But soon am forc'd to undergoe, The dire Extremes of various Woe. Am stript and mangled, cut and bruise'd, And with severest Tortures us'd:	Then sent to visit all my Friends, Who use me for their private Ends. Men of all Ranks my Virtues own, From meanest Cottage to the Throne, [Crown. And much I'm aiding to the } The learned <i>Sophs</i> in Hall and College, [ledge. Ascribe to me their Share of Know- The <i>Smarts</i> to me indebted are, For many Airs that please the <i>Fair</i> . Two <i>Senies</i> that are near related, I gratify, when once translated. But tho' 'tis strange, ye <i>Fair</i> , 'tis true, [you. I please but one, when found with
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PRIZE ÆNIGMA, by *Celia*

(Whoever answers it before Candlemas Day, has a Chance for 10, and another for 8 Diaries.)

What tho' not *Iris*, on her gaudy Bow,
More Colours boasts than on my Body glow;
Tho' Birds and Insects, Beasts and Man their King,
To aid my Charms their various Tribute bring---
Tho' form'd for Fraud---Yet I respect the Fair:
You've nothing, Ladies, from my Charms to fear.

Like the laborious *Bee*, retir'd in Cell;
While Winter Frosts prevail I lonely dwell;
But when returning Suns bid *Zephyrs* play,
Forth, like the *Bee*, I roam in search of Prey:
And now the Air with pointed Wings I cleave,
Now soft descend, and kiss the gliding Wave.
Arm'd too with mortal Sting, I skip and dance,
And what, ye Fair, will your Surprise enhance,
Who boldly dares with Lips but touch my Face,
Instant I seize, and kill in the Embrace.

But,

But ah! on me a thousand Ills attend,
Which bring me oft to an untimely End :
Dev'ous thro' pathless Air I oft am tost,
Oft in the Brake or dreary Waste am lost ;
Oft caught by those I cheat, I'm captive led,
And, in betraying, am myself betray'd :
Thus disappointed in my fraudulent Care,
I find below a living Sepulchre.

We own ourselves obliged to Mr. *Lydal*, Mr. *Baker*, Mr. *Dawson*, Mr. *Kent*, W. L. Mr. *Mangle*, Mr. *Handford*, Mr. *Underwood*, and some Others, for the new Ænigmas sent by them ; which will be inserted as Opportunity permits.

NEW QUÆRIES, &c. to be ANSWERED in the next Year's Diary.

Quære I. by T. B.

W HETHER Knowledge, or the Want of it, contributes most to the Tranquillity and Self-Satisfaction of the Bulk of Mankind?

Quære II. by Mr. *Rich. Waddington*.

Why are Cuckolds said to wear Horns?

Quære III. by Mr. *Fr. Taylor*.

Are there different Degrees of Honesty?

Quære IV. by Mr. *J. Tapner*.

What Reasons can be assigned, setting aside Custom, why the Man should begin the *Courtship* rather than the Woman?

A Rebus by Mr. *Tho. Lampit*.

A Weight by which the Shepherds poize,
A Place where Lions make a Noise,
Part of a Bear, in much Request,
These shew the Town in which I rest.

Another by Mr. *John Lewin*.

To one fifth of *Saul's* Uncle, connected must be
Five hundred, when wrote in the shortest Degree,
With a Colour reversed; by which will be shewn
The Name of a Creature, whose Virtues are known.

A Paradox by Mr. *Ralph Hulse*.

There is a Bird which bringeth forth a living Creature, and nourisheth it with Milk.

Another by Mr. *Rich. Gibbons*.

Upon the longest Day throughout the Year,
And on the shortest too, I'll make appear,
As well when Days and Nights have equal been,
At all these Times, I have WHIT-SUNDAY seen.

Another

Another by Mr. Lionel Charlton.

A Wainscot Board has three Holes through it, one in Form of a Circle, whose Diameter is 8 Inches; another in Form of a Square, whose Sides are each 8 Inches; and the third in Form of an isosceles Triangle, whose Base and Altitude are also each 8 Inches: To which Holes a Wedge or Plug may be fitted, so as to exactly fill up, or just go thro' any of the said Holes.

An *Ænigmatic-Chronological Problem* by Mr. R. Gibbons.

Three Primes in right Succession join'd, a certain Term will shew,
And when revers'd, a *Contra* Kind of Period's in View:
But if transpos'd another Way, a famous Date you'll see
For limiting a Festal-Day, and Clergy's humble Fee.

To the Author of the *Ladies Diary*.

SIR,

I should be glad to see the Sentiments of your Correspondents on the following *Paradox* propos'd by the Shepherd *Dametas* to *Menalcas*:

Say where the Round of Heav'n, which all contains,

To three short Ells on Earth our Sight restrains;

Tell that, and rise a *Pæbus* for thy Pains.

Isaac Tarratt.

See Dryden's Virgil.

ANSWERS to the MATHEMATICAL QUESTIONS in the last Year's Diary.

I. QUESTION 391, answered by Miss E. S. to the Proposer
Miss Atkinson.

I happily congratulate
With you in Joys of dear EIGHTEEN. Nor Age, nor Trouble intervene;
Oh! might we ever these partake, But Years, alas! too soon will fly,
And all the gaudy Scene destroy.

The same answered by Mr. W. Litson.

By False-Position it appears,
Your Age, fair Miss, is Eighteen Years.

Thus it was also answered by *Emilia*; Mr. *Jos. Briscall*; Mr. *J. Wood*; Mr. *M. Hicbins*; and Mrs. *Pris. Miferton*, who sent the Process wrought out at Length.

Mr. *B. Lydal*, addressing himself to the Proposer, answers it thus.

Let x denote your Age, then will $56 + x - 58 = 2x - 20$; and consequently $x = 18$. A very good Age for Matrimony, *Miss*.

In this manner it was also answered by Mr. *J. Beresford*; Mr. *Jos. Briscall*; Mr. *J. Carr*; Mr. *Jos. Dawson*; Mr. *John Dodson*; Mr. *G. Dunn*; Mr. *D. Hastings*; Mr. *T. Knight*; Mr. *G. Langley*; Mr. *Jos. Lord*; Mr. *T. Lowe*; Mr. *W. Richardson*; Mr. *Jos. Scott*; Mr. *T. Sharp*; Mr. *G. Stapley*; Mr. *J. Taylor*; Mr. *W. Tombs*; Mr. *T. Wilkin*; and many others, as may be seen in the Catalogue.

II. QUESTION 392, answer'd by Mr. *W. Stoker*, of *Fattfield Staiths*.

The square Roots of the Distances being as the Times we have (*per Quest.*) as $\sqrt{1}$ to $\sqrt{2}$, so is the Time of falling thro' the first Half, to the Time of falling thro' the whole required Height: And therefore

as $\sqrt{2}-1$ is to $\sqrt{2}$, so is 1 Second (the Time of Descent thro' the latter Half) to $\frac{\sqrt{2}}{\sqrt{2}-1} (=2+\sqrt{2}) = 3,414$ the Time of Descent thro' the whole Height: Whence the Height itself is found $= 187,48$ Feet.

The same answered by Mr. *J. Nichols*.

Let t = the whole Time of Descent, so will $t-1$ = the Time of Descent thro' the first Half of the Tower's height; and therefore (the Spaces descended being always as the Squares of the Times) we have $t^2 : (t-1)^2 :: 2 : 1$; whence $t^2 - 2t + 1 = \frac{1}{2}t^2$: From which $t = 2 + \sqrt{2} = 3,414$, and the Tower's Height $= 187,48$ Feet.

The same answer'd by Mr. *J. Boston*.

Let $a = 16 \frac{1}{2}$ Feet (the Ball's Descent in the first Second Time) and x = the Seconds the Ball was falling; then (by the Question and the Law of the Descent of heavy Bodies) the Tower's height will be $= ax^2$, and the half of that Height $= a \times x - 1^2$; hence we have $\frac{1}{2}ax^2 = a \times x - 1^2$: consequently $x = 2 + \sqrt{2} = 3,41421$; and $ax^2 = 187,4806$ Feet = the Tower's Height.

In the very same Manner it was answered by Mr. *W. Bacon*; Mr. *S. Bamfield*; Mr. *Ja. Beresford*; Mr. *W. Bewil*; *Birchowerensis*; Mr. *G. Brownbridge*; Mr. *R. Butler*; Mr. *Abr. Botbam*; Mr. *Lionel Charlton*; Mr. *Tim. Drury*; Mr. *R. Flitcon*; Mr. *P. George*; Mr. *R. Gibbons*; Mr. *E. Griffiths*; Mr. *J. Honey*; Mr. *T. Hopkinson*; Mr. *S. King*; Mr. *T. Peart*; Mr. *W. Phipps*; Mr. *Ja. Robinson*; Mr. *Jos. Scott*; Mr. *J. Shipman*; Mr. *W. Spicer*; Mr. *W. Trott*; Mr. *H. Watson*; Mr. *R. Weston*; Mr. *C. Wildbore*; and Mr. *R. Young*.

III. QUESTION 393. answered by Mr. *Rich. Gibbons*.

Put $p = xz$, and $s = xx + xz$, $a = 546560$, and $e = 1986992$: Then, by the Question, $sp = a$, and $s^2 = e + 2p^2 = \frac{a^2}{p^2}$. Hence, by completing the Square and Reduction, p is found $= 448$, and $s (= \frac{a}{p}) = 1220$. Consequently $x + z = \sqrt{s + 2p} = 46$, and $x - z = \sqrt{s - 2p} = 18$, and therefore $x = 32$ and $z = 14$.

The same answered by Mr. *W. Phipps*.

Putting $a = 546560$, and $b = 1986992$, we have, by the first Equation, $x^2 + z^2 = \frac{a}{xz}$; from the Square of which take the Second, so shall $2xz = \frac{a^2}{x^2z^2} - b$: whence $x^4 + z^4 + \frac{1}{2}bx^2z^2 = \frac{a^2}{2}$, and consequently $x^2z^2 = \sqrt{\frac{aa}{2} + \frac{bb}{16}} - \frac{1}{4}b = 20054$; which call m^2 , and then $xz = m = 448$; whence, by Substitution, $x^2 + z^2 = \frac{a}{m}$: From which and $xz = m$, we have

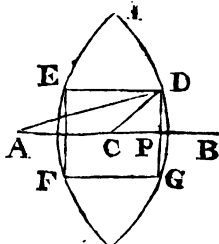
$$\begin{cases} x \\ z \end{cases} = \frac{1}{2} \sqrt{\frac{a}{m} + 2m} \pm \frac{1}{2} \sqrt{\frac{a}{m} - 2m} = \begin{cases} 32 \text{ the Wife's Age} \\ 14 \text{ the Daughter's Age.} \end{cases}$$

In this Manner it was answered by Mr. *Abr. Botbam*; Mr. *R. Butler*; Mr. *Lionel Charlton*; Mr. *R. Flitcon*; Mr. *J. Hemingway*; Mr. *J. Honey*; Mr. *Step. King*; Mr. *S. Koit*; Mr. *J. Nicbols*; Mr. *C. Tate*; Mr. *T. Wilkin*; Mr. *R. Young*; and some others. — Mr. *W. Bacon*; Mr. *J. Eaden*; Mr. *P. George*; Mr. *J. Goodbead*; Mr. *E. Griffiths*; Mr. *W. Stoker*; and some others, solve it by substituting for the Sum and Difference of the two unknown Quantities. Thus, making $v + y = x$, $v - y = x$, $546560 = 2a$, and $1086992 = 2b$, the given Equations are reduced to $v^4 - y^4 = a$, and $v^4 + y^4 + 6v^2y^2 = b$; and, by subtracting the former from the latter, and putting $b - a = 2c$, there comes out $3y^2v^2 = c - y^4$ or $9y^4 \times v^4 (= 9y^4 \times y^4 + a) = c - y^4^2$, or $8y^8 + 9a + 2c \times y^4 = c^2$: Which Equation, solved, gives $y = 9$; whence $v = 23$; and $x = 32$; and $z = 14$.

IV. QUESTION 394, answer'd by Mr. *Cha. Tate*.

Construction. Let the given Distance AB of the two Centers, be bisected in C; and make the Angle BCD = $\frac{\pi}{2}$ a right Angle; then a Perpendicular DP, let fall from the Intersection D, will evidently be half the Side of the inscribed Square DEFG.

Calculation. — The Radius AD being drawn, in the Triangle ACD will be given $AD = 25$, $AC = 15$, and the Angle ACD = 135° ; whence DAC is found = $19^\circ 54'$, and from thence $DP = 8,5078$, the double of which 17,0156, is the Side of the Square.



In this Manner it was constructed and solved by Mr. *P. George*; Mr. *R. Gibbons*; Mr. *J. Milbourn*; Mr. *T. Moss*; Mr. *J. Nicbols*; Mr. *J. Shipman*; and Mr. *Abr. Stone*.

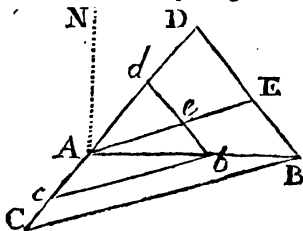
The same answered Algebraically, by Mr. *W. Harrison of Wigan*.

Putting the Radius $AD = a = 25$, $AC (= BC) = b = 15$, and $CP (= PD) = x$, we have (per. Eu. 47. 1.) $b^2 + x^2 = a^2$; whence $x^2 + bx = \frac{1}{2}a^2 - \frac{1}{2}b^2$, and consequently $x = \sqrt{\frac{1}{2}a^2 - \frac{1}{4}b^2} - \frac{1}{2}b = 8,5078$: Therefore $ED (= DG) = 17,0156$. W.W.R.

In this Manner it was answered by Mr. *J. Boston*; Mr. *G. Brownbridge*; Mr. *D. Hastings*; Mr. *Steph. King*; Mr. *S. Koit*; Mr. *B. Lydal*; Mr. *W. Phipps*, and many Others.

V. QUESTION 395, answer'd by Mr. *Philip George*.

Construction. Draw the Meridian AN; and, supposing A to be the Place of the Headland, draw AB, AE, and AD to represent the given Bearings of the Ship therefrom; in DAC take Ac to A d in the given Ratio of the Times, or as 4 to 6, and draw cb parallel to AE, meeting AB in b; then draw bcd , to which the Ship's Course BED (let AB be what it will) must



Algebraic Solution to the same, by Mr. W. Spicer.

PUT $a = BC = 12$, $b = BA = 10$, $s = \text{Sine of } 60^\circ$, and p and q equal to the Sine and Co-sine of $\angle BCI + \angle BAK = 152^\circ. 51'. 58''$, and x and y those of $\angle BAK$: Then will $py + qx$

$= \text{Sine } \angle BCI$; and (per Trig.) $s : b :: x : \frac{bx}{s} = BK$; and $s : a ::$

$py + qx : \frac{apy + aqx}{s} = BI$: Therefore $\frac{bx + aqx + apy}{s} = IK$,

a Max. In Fluxions $b\dot{x} + aq\dot{x} + ap\dot{y} = 0$: But $\dot{y} = -\frac{x\dot{x}}{y}$; whence

$b\dot{x} + aq\dot{x} - \frac{apx\dot{x}}{y} = 0$: Solved, $\frac{x}{y} (= \text{Tang. } \angle BAK) =$

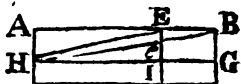
$\frac{b + aq}{ap}$. Hence $\frac{1}{s} \sqrt{a^2 + 2abq + b^2} = AC = 24.7002$; and

$\frac{\sqrt{3}}{3} \times a^2 + 2abq + b^2 = 26.42$, the Area required.

According to the former of the two preceding Methods it was also answered by Messrs. *Moss* (the Proposer), *Pearl*, *Rollinson*, *Trott*, and *Watson*; and according to the latter by Messrs. *Botham*, *Charlton*, *George*, *Nichols*, and some others. — Many Contributors have solved this Question upon a Supposition that one Side of the required Triangle is parallel to the longest Side of the given one; which, tho' very near, is not strictly true; the said Sides, when the Area is the greatest possible, being inclined to each other in an Angle of $3^\circ. 41'$.

VII. QUESTION 397 answered by Mr. Abr. Botham.

SUPPOSING HG to be the Length of the *Vise*, and I the Place of the *Statue*; let t express the Tangent of $\frac{1}{2}$ of $\angle EHI$, which (by the Question) is $\frac{1}{2}$ of $\angle BHG$; also let $a = 1501$, and $b = 1000$: Then the Tangents of $\angle EHI$, and



BHG , being expressed by $\frac{3t - t^3}{1 - 3t^2}$, and $\frac{2t}{1 - t^2}$ (vide Theor. p. 41,

Diary 1755) and these Tangents being to each other in the given Proportion of a to b , we therefore have $\frac{3bt - bt^3}{1 - 3t^2} = \frac{2at}{1 - t^2}$; which,

properly reduced, becomes $t^4 + \frac{6a}{b}t^2 - 4 \times t^2 = \frac{2a}{b} - 3$; and this,

solved, gives $t = .019987$: From whence the Length of the *Vise* is found $= 1250$ Yards.

According to the same Method it was also answered by Messrs. *Abb* (the Proposer), *Butler*, *Charlton*, *Griffiths*, *Moss*, *Pearl*, *Rollinson*, *Spicer*,
C

Spicer, and Watson.—Some very ingenious Gentlemen have taken a good deal of Pains, in order to convince us, that this Question was not properly limited; and others have hinted the same Thing; not considering, that, from the Ratio of any two Angles ($\angle H I$, $\angle H I$) and the Ratio of their Tangents (which Ratio's are here given) both the Angles and Tangents may, *always*, be determined.—The Smallness of the Angles in the Case propos'd (where the Tangents are nearly in the same Ratio with them) is, we presume, what embarras'd these Gentlemen: The Method of Trial and Error (as it is called) whereby most of them attempted the Solution, being of little or no Use here.

VIII. QUESTION 398 answered by Mr. G. Brownbridge.

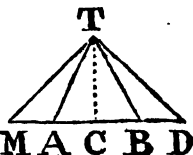
THE Places of the three Towns being represented by M, D, and T, let the three Parts of MD (as specified in the Problem) be denoted by $6x$, a , and $5x$, respectively; then

$$a : 22x :: 2x : \frac{44xx}{a} = AC - BC; \text{ therefore}$$

$$AC = \frac{a}{2} + \frac{22xx}{a}, \quad BC = \frac{a}{2} - \frac{22xx}{a}, \quad MC$$

$$= \frac{a}{2} + 6x + \frac{22xx}{a}, \quad \text{and } DC = \frac{a}{2} + 5x - \frac{22xx}{a}. \quad \text{Now } MC \times DC$$

$$= (\overline{CT})^2 = \overline{AT}^2 - \overline{AC}^2; \text{ whence we have } 44x^3 + 184ax^2 - 11a^2x = a^3, \text{ or } 44x^3 + 1288x^2 - 539x = 343; \text{ which, solved, gives } x = .75284. \text{ Therefore } MD = 15,281, \quad MT = 12,236, \text{ and } DT = 9,153.$$



The same answered by Mr. R. Butler:

Supposing M, D, and T to represent the three Towns, let $MA = 6x$, $TA = 12x$, $BD = 5x$, $BT = 10x$, and $AB (= 7) = a$:

Then (by Trig.) $a : 22x :: 2x : \frac{44x^2}{a} = \text{Diff. Segments } AC \text{ and } BC$;

whence $CA = \frac{a}{2} + \frac{22x^2}{a}$, and $CB = \frac{a}{2} - \frac{22x^2}{a}$. But (by Eu. 12. 2.)

$$\overline{MA}^2 + \overline{AT}^2 + 2MA \times AC + \overline{DB}^2 + \overline{BT}^2 + 2BD \times BC = (\overline{MT}^2 + \overline{DT}^2) = \overline{MD}^2 \text{ (by Eu. 47. 1.)}; \text{ that is, in Species,}$$

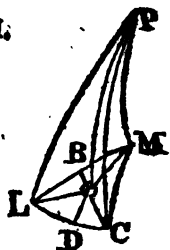
$$305x^2 + 11ax + \frac{44x^3}{a} = a + 11x^2, \text{ or } 44x^3 + 184ax^2 - 11a^2x = a^3.$$

Whence x is found $= .752846$: Therefore $MD = 15,2813$, $MT = 12,2365$, $TD = 9,1534$, and the Rate at which he travelled was 4,1064 Miles per Hour.

To this Question upwards of 30 true Answers have been received, as will appear by the Catalogue.

IX. QUESTION

IX. QUESTION 399 answered by Mr. H. Watson, the Proposer.



LET P represent the Pole of the Earth, and L, C, and M the three Places proposed: From the Latitudes and Longitudes of which the Distances LM, LC, and the contained Angle CLM, will (by common Proportions) be found $42^{\circ}.38'$, $22^{\circ}.17'$, and $40^{\circ}.55'$, respectively. Then supposing OB and OD perpendicular to LM and LC (O being the required Place) we have given LB ($=\frac{1}{2}LM$) $=11^{\circ}.19'$, LD ($=\frac{1}{2}LC$) $=11^{\circ}.8'\frac{1}{2}$, with the Sum of the Angles BLO, DLO, at the Bases (the Hypotenuse LO being common); whence it will be (*per Spherics*) $\text{Sin. } \frac{LB+LD}{DLO+BLO} : \text{Sin. } LB-LD :: \text{Co-tang. } 20^{\circ}.27'\frac{1}{2} : \text{Tang. of } \frac{DLO-BLO}{2}$ $=1^{\circ}.13'\frac{1}{2}$; whence BLO $=19^{\circ}.14'$; from which, and LB, we have LO ($=MO=CO$) $=11^{\circ}.58'$, and then, in the Triangle LOP, will be given LO, LP, and the Angle OLP ($=84^{\circ}.27' = PLM+BLO$); whence OP $=38^{\circ}.43'$, and $\angle LPO=19^{\circ}.13'$, being the Complement of the Latitude, and the Longitude from London, respectively.

In the very same Manner it was answered by Mr. T. Mof.

Algebraic Solution to the same by Mr. R. Young.

Having found (by common Spherics) LB, LD, and the Angle DLB, put the Tang. of LB $=a$, that of LD $=b$, the Sine and Co-sine of DLB equal to m and n , and those of BLO equal to x and y , respectively: Then, the Co-sine of DLO being expressed by $m x + n y$, it will be, *per Spherics*, $\{y:a::1(\text{Rad.}): \text{Tang. LO}\}$; whence $\frac{a}{y} = \frac{b}{m x + n y}$; and consequently $\frac{x}{y} = \frac{b - n a}{m a} = \text{Tang. BLO} = 19^{\circ}.14'$: From which the Latitude and Longitude of the Place are found to be $51^{\circ}.17'$, and $19^{\circ}.13'$, respectively.

Messrs. Bamfield, Birchowerensis, Bosham, Charlton, Hopkinson, Spicer, and some others, have also given very neat Algebraic Solutions to this Problem. Mr. P. George, by producing the Perpendicular DO to meet the Side LM, solves it by common Spherics: And Messrs Peart and Rollinson, after finding LM, LC, and the Angle CLM (as above) compute the Difference of the other two Angles LMC, LCM, which (because OMC $=$ OCM) will also be the Difference of OML and OCL, or of their Equals OLB and OLD; whence both these Angles are known, and from thence LO.

X. QUESTION answered by Mr. Hugh Brown, the Proposer.

Putting $x = \frac{1}{12}$ of the Interest of 1 £. for one Year, we shall
(by discounting at Simple Interest) have $\frac{250}{1+12x} + \frac{120}{1+10x} +$
 $\frac{90}{1+9x} + \frac{100}{1+8x} + \frac{140}{1+6x} + \frac{150}{1+5x} + \frac{180}{1+3x} = 1000$. The
Fractions reduced into Series, and properly ordered, give $x = \frac{3605x^2}{36133x^3}$, &c. $= \frac{3}{794}$; whence $x = .0037783 + .0001296 +$
 $.0000040 = .003912$: Therefore the required Rate is £. 4. 6. 94, or 4 l.
13 s. 10 d. $\frac{1}{2}$. per Cent.

The same answered by Mr. John Honey.

Let x^{12} = Rate per Annum; then x (according to Compound Interest) will be the Rate for 1 Month, x^2 for 2 Months, &c. whence the present Value of 180 £. to be received at the End of 3 Months will be $\frac{180}{x^3}$ &c. Hence we have $\frac{180}{x^3} + \frac{150}{x^5} + \frac{140}{x^6} + \frac{100}{x^8} + \frac{90}{x^9} + \frac{120}{x^{10}} + \frac{250}{x^{12}} = 1000$ (per Quest.); and therefore $x^{12} = .18x^9 = .15x^7 = .14x^6 = .1x^4 = .09x^3 = .12x^2 = .25$: Solved, $x = 1.003852$; and $x^{12} = 1.047216$; and consequently 4 l. 14 s. 5 d. the Rate per Cent. required.

In the very same Manner it was answered by Messrs. W. Bevil, E. Rollinson, and H. Watson.

Mr. R. Flitcon answers it thus:

Let x , $2x$, and $3x$ be the Interest of one Pound for 1, 2, and 3 Months, respectively; then the Interest of 1000 £. for 3 Months will be $3000x$, and its Amount $1000 + 3000x$, from which subtracting 180 £. then paid, the Remainder $820 + 3000x$ will be a new Principal; which, in 2 Months more, amounts to $820 + 4640x + 6000x^2$; from whence subtracting 150 £. then paid, the Remainder $670 + 4640x + 6000x^2$ will be the Principal (or Debt) at the End of 5 Months: And by proceeding in the same Manner with all the rest of the Payments, the Equation resulting (according to the Question) will, in its least Numbers, be $-3 + 758x + 4871x^2 + 14503x^3 + 24016x^4 + 22692x^5 + 11456x^6 + 2400x^7 = 0$. Hence $x = .0038609$, and the Rate, per Cent. per Annum, 4 l. 12 s. 7 d. $\frac{3}{4}$.

According to this last Method it was likewise solved by Messrs. Bamfield, Butler, Goodhead, and Trott, whose Equations exactly agree.— A great Number of other Solutions have been received, upon Principles somewhat different, which however come very near the Truth.

XI. QUESTION 401 answered by the Proposer, Mr. Rollinson.

LET a denote the Number of the Living corresponding, in the Table, to the given Age; and let the succeeding Decrements, or the Numbers that die off yearly (for as long as they continue equal) be represented,

represented, each, by b ; also let the next succeeding Decrements (for as long as they continue equal) be denoted, each, by c ; and the next after those by d ; and so on: Putting r to represent the Rate, and P the Value of the Perpetuity corresponding: Moreover, suppose that, after the Decease of the proposed Life A , the Estate, or Annuity, is to go to another Person B , and his Heirs, for ever. Then the Probability that

the Life A fails the first Year being $\frac{b}{a}$, the Value of B 's Expectation on that Contingency will therefore be $P \times \frac{b}{a}$: And the Probability of A 's dropping the second Year being also $\frac{b}{a}$, the Expectation of B thereon will be $\frac{P}{r} \times \frac{b}{a}$, ($\frac{P}{r}$ being the Value of the Perpetuity discounted for one Year). In the same Manner the Expectation of B on the third Year will appear to be $= \frac{P}{r^2} \times \frac{b}{a}$, and on the fourth Year $= \frac{P}{r^3} \times \frac{b}{a}$, &c.

Whence it is evident, that B 's whole Expectancy, on the Contingency of the Life's Failing in the first Interval, (m) during which the Decrements are equal, each, to b , is truly defined by $r P \times \frac{b}{a} \times \frac{1}{r} + \frac{1}{r^2} +$

$\frac{1}{r^3} \dots + \frac{1}{r^m}$, or its Equal $r P \times \frac{b}{a} \times \frac{1-r^{-m}}{r-1}$, which is also

$= \frac{r P^2}{a} \times b - b r^{-m}$, because $P = \frac{1}{r-1}$. Again, the Decrements

during the second Interval (n) being each $= c$, the Probability of the Life's Failing in any assigned Year of this Interval will therefore be denoted by $\frac{c}{a}$; and the Value of B 's Expectation, on the whole Interval,

by $\frac{P}{r^m} \times \frac{c}{a} + \frac{P}{r^{m+1}} \times \frac{c}{a} + \frac{P}{r^{m+2}} \times \frac{c}{a}$, &c. $= \frac{r P}{r^m} \times \frac{c}{a} \times \frac{1}{r} + \frac{1}{r^2}$

$+ \frac{1}{r^3} \dots + \frac{1}{r^n} = \frac{r P^2}{a r^m} \times c - c r^{-n}$. In the very same Manner

the Expectancy on the third Interval (p) appears to be $= \frac{r P^2}{a r^{m+n}}$

$\times d - d r^{-p}$; and on the fourth (q) $= \frac{r P^2}{a r^{m+n+p}} \times e - e r^{-q}$

&c. &c. Therefore, by collecting all these Values together, the whole

Expectation of B and his Heirs comes out $= \frac{r P^2}{a} \times b + \frac{c-b}{r^m} + \frac{d-c}{r^{m+n}}$

$+ \frac{e-d}{r^{m+n+p}} +$, &c. which, subtracted from P , the Value of the

Perpetuity, leaves $P = \frac{rP^2}{a} \times b + \frac{c-b}{r, m} + \frac{d-c}{r, m+n} + \frac{e-d}{r, m+n+p}, \&c.$
 for the true Value of the Life A: But $rP = P + 1$, and $\frac{1}{r, m}$,
 $\frac{1}{r, m+n}, \&c.$ are the present Values of 1 £. to be received at the End

of $m, m+n, \&c.$ Years; which being found (from the Tables) and represented by M, N, Q, &c. respectively, the Value of the Annuity will

$$\text{be } P = \frac{P, P+1}{a} \times b + c - b \times M + d - c \times N + e - d \times Q + f - e \times R,$$

&c. where the Series is to be continued 'till it terminates, and where the Co-efficient of the last Term will be the last of the Quantities $b, c, d, \&c.$ with a negative Sign, the next Letter in order being equal to Nothing.

XII. QUESTION 402 answered by Mr. S. Bamfield.

Supposing CE and DF to be perpendicular to the Horizontal Line AB, it is evident, from *Mechanics*, that $AE:BF::3:5$. If therefore $EC(=FD)=b=3$, $AB=a=6$, $AC+CD+DB=c=10$, and $AE=3x$, then will $BF=5x$; $EF(=CD)=a-8x$; and

$\sqrt{bb+9xx}(AC) + \sqrt{bb+25xx}(BD) + a - 8x = c$. From the Resolution of which Equation x is found = 3.1786; and from thence $AC=3.1479$, $BD=3.3950$, and $CD=3.3951$.

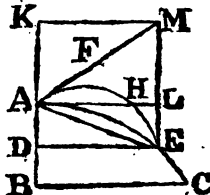
The same answered by Birchoverensis.

Put $AB(=6)=l$, $CE(=3)=b$, $AC+CD+DB(=10)=s$, and $AC=x$; then $AE=\sqrt{xx-bb}$, and, by the Property of the Center of Gravity, $BF=\frac{5}{3}\sqrt{xx-bb}$: Consequently $CD(=EF)=l-\frac{8}{3}\sqrt{xx-bb}$, and $BD=\frac{1}{3}\sqrt{25xx-16bb}$. Whence we have $x+l-\frac{8}{3}\sqrt{xx-bb}+\frac{1}{3}\sqrt{25xx-16bb}=s$. This Equation, properly reduced, will give $x^3-3,35x^2-10,8x+36=0$; where x is found = 3.1479.

Messrs. Bevil (the Proposer), Botbam, Moss, Peart, Rollinson, Wat-fen, and Young, sent elegant Solutions to this Problem.

XIII. QUESTION 403 answered by Mr. Tho. Peart.

FROM the given Height of the Mountain AB, and its Semi-Diameter BC, the Parameter of the Parabola will be found = 11616 Yards; from whence the Curve AEC may be constructed. Take AK = twice the Height of the perpendicular Shot, and draw KM perpendicular thereto; in KM take the Point M, so that a Perpendicular let fall from thence, meeting the Curve in E, shall be equal to the straight Line AE; then join A, M, which will be the Line of Direction.



Solution.

Solution. Let d = the Height of the perpendicular Shot, and a = 11615 = the Parameter, $AD = x = LE$; then $ME (= AD + AK) = 2d + x$, $DE = \sqrt{ax}$, and $AE = \sqrt{ax + xx} = 2d + x (= ME)$; therefore $x = \frac{4dd}{a - 4d} = 222,323$ Yards, and $AE (2d + x) = 1622,323$; from whence the Angle AED is found $= 70.52'.36''$; the Half of which being taken from 45° , there remains $41^\circ.3'.42''$ for the Angle of Elevation LAM . W. W. R.

The same answered by Mr. Walter Trott.

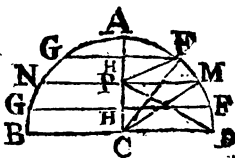
Put the Height AB of the Mountain ($= 600$) $= a$, the Semi-diameter BC of the Base ($= 2640$) $= b$, and the double Impetus ($= 1400$) $= c$: Then, supposing E to be the Place where the Ball (whose Path is AHE , and first Direction AF) impinges on the Surface, let AE and ED be drawn, the latter parallel to CB , and let $AD = x$; and then, by the Property of the Parabola, $DE^2 = \frac{b^2x}{a}$, and therefore $AE = \sqrt{\frac{b^2x}{a} + x^2}$. Hence, because the Dist. is to be a *Max.* we have (by SYMPSON'S EXERCISES, P. 199) $\sqrt{\frac{b^2x}{a} + xx}$

$= x (= AE - AD) = c$; from which $x = \frac{acc}{bb - 2ac} = 222,323 = AD$. Whence the Angle $EAD = 82^\circ.08'$; the Half of which ($= 41^\circ.04'$) is the true Angle of Elevation (HAF). W. W. R.

Messrs. *Botbam*, *Moss* (the Proposer), *Rollinson* and *Watson* answer it in the same Manner. Messrs. *Bamfield* and *Charlton* give the Investigation by a neat Fluxional Process, which Room will not admit.

XIV. QUESTION 404 answered by Mr. Lionel Charlton, of Whitby.

LET BAD be the given Hemisphere, P the required Point, NPM and GHE Sections of the Solid perpendicular to the Axis AC ; let PF , CF , and PD be drawn; putting $AC = r$, $PC = a$, $AP = e$, $PM = f$, $PD = g$, $PH = x$, and $PF = z$. Then the Effect of the Attraction of all the Particles in the Plane of the Circle GHE , on a Corpusele at



P , will, it is well known, be as $1 - \frac{x}{r}$; and consequently the Fluxion of the Attraction of the Segment $NGFM$ as $\dot{x} - \frac{x\dot{x}}{r}$: Which (because $a^2 + x^2 + 2ax = r^2$, and therefore $x = \frac{ff - xx}{2a}$, and $\dot{x} = -\frac{x\dot{x}}{a}$) will

be reduced to $x + \frac{f^2 - z^2}{2a} \times \frac{z}{a}$; whereof the, corrected, Fluent is $x + \frac{3f^2 z - z^3 - 2f^3}{6a^2}$: Which, when $x = e = z$, becomes $e + \frac{3ef^2 - e^3 - 2f^3}{6aa}$ for the Force of the upper Segment NAM in the Direction PA.

In the same Manner, taking GF below NM, the Fluxion of the Attraction of the Part NGFM will be, *βill*, expressed by $x + \frac{f^2 - z^2}{2a} \times \frac{z}{a}$, and the, corrected, Fluent by $x + \frac{3f^2 z - z^3 - 2f^3}{6aa}$, which, by taking $x = a$ (= PC) and $z = g$ (= PD) gives $a + \frac{3f^2 g - g^3 - 2f^3}{6aa}$ for the whole Force of the lower Segment NBDM in the opposite Direction PC. Hence we have $e + \frac{3ef^2 - e^3 - 2f^3}{6aa} = a + \frac{3f^2 g - g^3 - 2f^3}{6aa}$, or $6a^2 \times e - a + 3ef^2 - e^3 = g \times$

$3ff - gg$. But $e = r - a$, $ff = rr - aa$, and $g = \sqrt{rr + aa}$, so that, by Substitution, $2r^3 - 8a^3 = \sqrt{rr + aa} \times 2r^2 - 4a^2$; which, order'd, gives $12a^4 - 8r^3a + 3r^4 = 0$; where, taking $r = 1$, we have $a = 0,4230428$. Therefore the Ratio of AP to CP will be that of 0,5769572 to 0,4230428, or as 4 to 3, nearly.

The Author of a very neat Solution to this Problem (whom we should be sorry to disoblige by an improper Step) will, we hope, candidly excuse our giving Preference to the above; as Room would not possibly admit of both, and as the Fluents, here, may be comprehended by common Readers, for whose Improvement we are solicitous.

XV. QUESTION 405 answered by Mr. T. Mofs.

DIVIDE the given Equation by $\frac{y}{x}$, and you will have $\frac{x^2 \dot{y} - x \dot{x} y}{\frac{y}{x}}$
 $-\frac{ax \dot{y}}{y} - \frac{x \dot{x}}{b} = 0$; which, by taking the Fluent, becomes $\frac{x x}{y} + \frac{ax}{y} -$
 $\frac{x x}{ab} = d$ (a constant Quantity); whence $\dot{y} = \frac{2b \times ax + x x}{2bd + x^2}$, and
 consequently $y = a \sqrt{\frac{2b}{d}} \times \text{Arc whose Tangent is } \frac{x}{\sqrt{2bd}}$ (to Ra-
 dius 1) $+ b \times \text{Hyp. Log. } \frac{2bd + x^2}{d}$; where d and e may denote any
 constant Quantities at Pleasure.

The

The same answered by Mr. Patrick O'Cavanah, the Proposer.

In the given Equation ($\dot{x}\dot{y} - x\ddot{y} - a\ddot{y} - \frac{x\dot{y}^2}{b} = 0$) let $-\frac{\dot{y}\ddot{x}}{x}$ be wrote in the Place of $\ddot{y}$ (so that $\dot{y}$ may become the Quantity flowing uniformly) then will $\dot{x}\dot{y} + x \times \frac{\dot{y}\ddot{x}}{x} + a \times \frac{\dot{y}\ddot{x}}{x} - \frac{x\dot{y}^2}{b} = 0$, or $\dot{x}\dot{y} + \dot{x}\ddot{x} + a\ddot{x} - \frac{x\dot{y}^2}{b} = 0$; whose Fluent, it is evident, will be $\dot{x}\dot{x} + a\dot{x} - \frac{x^2\dot{y}}{2b} =$ some constant Quantity, let it be $c\dot{y}$, so shall $\dot{y} = 2b \times \frac{a\dot{x} + \dot{x}\dot{x}}{2bc + xx}$; and consequently $y = a \sqrt{\frac{2b}{c}} \times A + b \times L$; A being = the Arch whose Radius is 1, and Tangent $-\frac{x}{\sqrt{2bc}}$; L = the Hyp. Log. of $\frac{2bc + xx}{dd}$; and c and d any constant Quantities.

Mr. R. W. (whom, for particular Reasons, we should be glad to oblige) will not, we hope, take it amiss that his Solution to this Problem was not inserted, as his Reasoning upon the Correction of the Flúent (tho' very ingenious) is, nevertheless, defective.

* That the Substitution of $-\frac{\dot{y}\ddot{x}}{x}$ for $\ddot{y}$, in any Fluxionary Equation of the second (or any higher) Degree, causes no Difference in the Equation of the Fluents, may be thus demonstrated. Suppose the Relation of the Fluents to be expressed by the general Equation $y = Ax^m + Bx^n + Cx^p$, &c. then 'tis evident that $\frac{\dot{y}}{x} = mAx^{m-1} + nBx^{n-1} + pCx^{p-1}$, &c. And, if x be made constant, we shall, by taking the Fluxion a second Time, have $\frac{\ddot{y}}{x} = m(m-1).Ax^{m-2} + n(n-1).Bx^{n-2} + p(p-2).Cx^{p-2}$, &c. But, if $\dot{y}$ be made constant, we shall then have $-\frac{\dot{y}\ddot{x}}{xx} = m(m-1).Ax^{m-2} + n(n-1).Bx^{n-2} + p(p-2).Cx^{p-2}$, &c. Therefore, seeing $\frac{\dot{y}}{x}$ and $-\frac{\dot{y}\ddot{x}}{xx}$ are both equal to one and the same Quantity ($m(m-1).Ax^{m-2}$, &c.) they must necessarily be equal to each other, and consequently $\ddot{y} = -\frac{\dot{y}\ddot{x}}{x}$.

In like Manner it will appear that $\ddot{y} = \frac{3\dot{y}\ddot{x}^2}{xx} - \frac{\dot{y}\ddot{x}}{x}$. For, by taking

again

which the Ordinate makes with the Diameter EM , is found $= 86^{\circ}.56'\frac{1}{2}$. Again, since $S=Q$, we have $PS=PQ=12$, and $QE (= \frac{3}{5} PS) = 7.2$; therefore $RM (= 2 QE) = 14.4$, and $QR (= GQ = QE \times \frac{\sin. E}{\sin. G}) = 14.086 =$ the required Distance of the Port

R from the Port Q . Again, (by Trigonometry) $QS = 13.3337$, $SE (= QS - QE) = 6.1337$, and $En = 4.42$; which last put $= \frac{1}{2}b$, and let the Co-sine of the Angle $MKC (86^{\circ}.56'\frac{1}{2}) = m$: Then (supposing $EK = x$, and $CK = y$) we have (by the Property of the

Parabola) $2bx = y^2$; whence $x = \frac{y^2}{b}$, and consequently $(\sqrt{y^2 +$

$2myx + x^2$) the Fluxion of the Arch $EC = y \cdot \frac{\sqrt{b^2 + 2bmy + y^2}}{b}$;

which, by putting $v = mb + y$ and $b = b\sqrt{1 - mm}$, will be transf-

formed to $\frac{v\sqrt{b^2 + v^2}}{b}$; whereof the (corrected) Fluent will be

$\frac{v\sqrt{bb + vv}}{2b} - \frac{1}{2}mb + \frac{b^2}{2b} \times \text{Hyp. Log.} \frac{v + \sqrt{bb + vv}}{mb + b}$: From

whence (by taking $y = RN = 144$) the Distance RE run by the Ship C is found $= 19.77$ Miles.

Mr. L. Charlton, Micromegas, Mr. E. Rollinson (the Proposer), and Miss Frances Harris (whose Performances are an Honour to her Sex) have given elegant Solutions to this Problem, by a Fluxionary Calculus founded on the Properties of Tangents; some of which Solutions we should have inserted, could we possibly have found Room for them. — Mr. Bamfield truly determines the Distance QR , and, by an ingenious Approximation; makes the Distance sailed by the Ship C to be 19,89 Miles.

The first PARADOX answered by Mr. C. Wildbore.

A Right-Line perpendicular to the Plane of the two given Lines, at the Point of their Concourse, will be perpendicular to them both.

The second PARADOX answered.

THIS has been made out a great many Ways, some of which are exhibited by the Schemes in the Margin.

I seldom Woods or Groves frequent,
My Hours in them are rarely spent;
I muse where Billows roar:
Yet plant your Trees in Form like this,
Your Purpose then you will not miss;
But I must quit the Shore.



J. Richardson, Sailor.

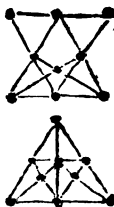
Nine

Nine Trees in nine Rows may planted be:
Would you know how? The Margin see.

Edw. Robinson.

This Scheme, Friend Gibbons, plainly shows
What you desire to learn:
With just nin Trees, you'll just nine Rows,
And three ;, each, discern.

J. Tapner.



According to one or other of these Methods it was answered by Mr. Thomas Osborne, Mr. Jof. Briscall, Mr. H. Watson, Mr. C. Wildbore, Mr. T. Wilkin, Mrs. Prif. Mifflerton, and Mr. S. Bamfield; besides which, various other Answers have been received, as may be seen by the Catalogue.

*New MATHEMATICAL QUESTIONS to be answered
in the next Year's DIARY.*

I. QUESTION 406 by Ruficus.

TWO *quondam* Friends at Market meet,
(*John* Sheep had brought, *Hodge* Pigs and *Geese*)
Who, whilst a chearful *Pot* they took,
A Change propos'd, and Bargain struck:
For ev'ry *Sheep*, they did agree,
A *Pig* and *Goose* the Price should be.
Hodge had ten *Pigs* less than he'd *Geese*,
Which last were charg'd, Six Groats a-piece:
By Computation *shrew'd* 'twas found,
That *Pigs* and *Geese* were worth five Pound;
And that they were in Number more
Than all *John's* Sheep, by four times four.
— Now, *Sirs*, from hence, please to declare
What Number of each Sort there were:
Supposing that, for *John's* whole Flock,
Hodge, in Exchange, gave all his Stock.

II. QUESTION 407 by Philo-Pesos.

IN a given Triangle, to inscribe a Rhombus, having one of its angular Points coincident with a given Point in the Base.

III. QUESTION 408 by Mr. R. Young, *Writing-Master*,
in Chester.

THE Sides of a quadrangular Field are known to be 9, 10, 11, and 12 Chains, respectively: And, if a Diaognal be therein drawn, the Part included by it and the two shortest Sides will be to the remaining Part in the given Proportion of 3 to 5: From hence the Content of the Field is required.

IV. QUESTION

IV. QUESTION 409 by Mr. H. Watſon.

TO determine a Point in a given Triangle (whoſe Sides are 16, 20, and 24 Inches) from whence Perpendiculars being let fall on all the Sides, the Solid (or continual Product) contained under them, ſhall be the greateſt poſſible.

V. QUESTION 410 by Mr. Walter Trott.

THE Diſtances of the three Corners of a right-angled triangular Field, from a Watering-place within the Field, are known to be 38, 50, and 62 Perches, reſpectively: To find, from thence, the Content of the Field, it being the greateſt the Data will admit of.

VI. QUESTION 411 by Mr. J. Aſh.

BEING on a Journey, in Lat. $52^{\circ} 30' N$. the third of April 1755, in the Afternoon, I obſerved the two Interſections of the inner Part of the interior Rain-Bow with the Horizon, to form an Angle, at the Place where I ſtood, of 60° : From which the Time of Obſervation is required.

VII. QUESTION 412 by Mr. Chr. Maſon.

THE Hūman Stage is Threeſcore Years and Ten;
So ſhort the Span! yet ſeldom reach'd by Men.

As Man's *Quietus* ought to be his Care,

'Tis now high Time for Maſon to prepare.

The rolling Years that o'er my Head have ſlow'd,

If you would know, they're in the Margin * ſhown.

* Viz. $v + x + y + z = 1734$, $v^2 + x^2 + y^2 + z^2 = 2850372$,
 $vxyx = 3240960$, and $x = z$; v being the Year of my Birth, x the Month, y the Day, and z the Hour P. M. all which are required.

VIII. QUESTION 413 by Mr. Pat. O'Cavanah, of Dublin.
(Addreſſed to the ingenious Authors of the 378th and 393d Questions.)

AH! much, my Friends, I mourn your Lot,

Who have ſuch woeful *Help-mates* got:

Both Sluts and Scolds! oh, dreadful Curſel

Bad Daughters too! What can be worſe?

Yet hear me, and to eaſe your Grief,

I'll teach you what will yield Relief; *

But like rare *Noſtrums*, little known,

In *myſtic Terms* it muſt be ſhown —

For *Brotſter Philomaths* alone.

* This powerful Specific is denoted by a Word conſiſting of five Letters, and theſe have their Places in the Alphabet expreſſed by the Values of u , w , x , y , and z , in the ſubjoined Equations ‡: By means whereof the important Myſtery may be diſcloſed, and that, without having the Root of any Equation to extract, higher than a Quadratic.

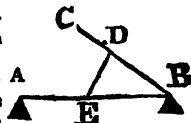
‡ Viz. $w^2 + z^2 = 80$; $wx + w + x = 53$; $\frac{x^2 + y^2}{x + y} = 18 \frac{1}{10}$;

$\frac{x^3 + y^3}{x^2 + y^2} = 18 \frac{172}{181}$; $\frac{z^5 + x^5}{xx \times u + x^3} = 2 \frac{1}{10}$.

IX. QUES-

IX. QUESTION 414 by Mr. E. Rollinson.

A Beam BC is to be supported in a given Position, by Means of a Prop DE, of a given Length, infisting on the horizontal Beam AB: 'Tis proposed to determine the Position of the Prop, so that the Beam AB whereon it stands may be the least subject to break, or so that the Force, whereby it actually tends to break, may be to the whole Force it can sustain at E in the least Ratio possible, the Thickness of the Beam being every-where the same.



X. QUESTION 415 by Mr. Hugh Brown.

A N *Usurer* lends out 2000 £. at 5 per Cent. per Annum Compound Interest; which the Borrower is to clear off by Quarterly Payments, viz. 1 £. at the End of the first Quarter, 2 £. at the End of the second, 3 £. at the End of the third, and so on. *Quære*, At what Time will the Debt be the greatest possible?

XI. QUESTION 416 by Mr. Tho. Mofs.

SUPPOSE 12 Half-pence to be thrown up, and those that come up Heads to be taken away, and the remaining ones to be thrown up again, and so on, in the same Manner, 'till all the Half-pence have been thrown up Heads: 'Tis proposed to find in what Number of Throws, according to an Equality of Chances, this may be effected.

XII. QUESTION 417 by Mr. W. Bevil.

SUPPOSE that a Chain is to be suspended, at its Extremes, by two Tacks, in the same horizontal Line, at the Distance of 10 Feet: To find the Length of the Chain, such that the Stress or Force thereof, upon the Tacks, may be a *Minimum*.

XIII. QUESTION 418 by Mr. Tho. Peart.

SUPPOSE a Mountain, formed by the Rotation of the *Catenaria*, whose superficial Content is equal to the Square of its Base-Diameter; and suppose two equal Pendulums, one at the Foot, and the other at the Vertex of the Mountain, to be put in Motion the same Instant; and that at the End of 24 Hours, measured by the former, a Cannon Ball is, there, discharged in such a Direction, as to fall the farthest possible upon the Mountain, and arrives at the Vertex at the same Instant the Pendulum, there, has measured 24 Hours: It is required to find the Mountain's Height, and the Velocity with which the Ball is discharged.

XIV. QUESTION 419 by Mr. R. Weston, Discip. Landenii.

FROM the Equation $a^3 \ddot{y} = a^2 \dot{y}^2 - y^2 \dot{x}^2$ it is proposed to find x in Terms of y , without first finding y in Terms of x , and then reverting the Series.

XV. QUEST-

XV. QUESTION 420 by Mr. Pat. O'Cavanah, of Dublin.

TO find the Sum of the Infinite Series $1 - \frac{x^3}{2.3} + \frac{x^6}{2.3.4.5.6} - \frac{x^9}{2.3.4.5.6.7.8.9} + \text{c.}$ by means of circular Arcs and Logarithms.

PRIZE-QUESTION by Mr. H. Watfon.

(Whoever answers the same before Candlemas-Day has a Chance for Twelve DIARIES.)

A Person being to pass from one Place A to another B at the Distance of three Miles, between which Places there lies a Morass, is desirous to know the Path he must describe, and also how far he must travel, to perform his Journey in the shortest Time possible; the Way, by reason of the Morass, being rendered so bad, that he can only move with a Celerity, every-where, proportional to his Distance from the Center thereof, lying one Mile distant from A, and two from B.

REMARKS and OBSERVATIONS.

SOME Contributors think that a due Regard is not paid to what they send.—We only wish these Gentlemen would take the Trouble to reckon up the Number of Names included in a single Diary, and examine into the Merit of the several Performances annexed to them, before they prefer their Accusation.

New Mathematical Problems are (as before signified) either received with, or without the Solutions: But as to the Ænigmas, Paradoxes, &c. we must still request our Correspondents to send the Solutions along with them; it being impossible for us to judge rightly of the Propriety and Merit of such Performances, without knowing the Subjects whereon they are wrote; which are often so obscure, that it would be impossible for an Oedipus to unriddle them.

Letters from Mr. J. Ash, Mr. W. Kingston, and Mr. R. Cave, relating to others sent by them, have been duly received, but those referred to never came to hand.—The second Letter from *Birchovenensis* arrived too late.

The Ænigma, whereof the Solution was sent concealed under a Wafer, could not be inserted in the Manner hinted at, without giving Umbage; tho' (we are very sensible) the Merit of the Performance might justly authorize such a Step, without any Imputation of Partiality.

The first Prize, of ten Diaries, was won by Mr. Ant. Moore; the second, of eight Diaries, by Mr. J. Morland; the third, of six Diaries, by A. M. and the fourth, of twelve Diaries (for the Solution of the Prize-Question) by Miss Frances Harris.

As these our annual Prizes (particularly the Ænigmatic ones) do not, as we could wish, always fall to the Lot of Contributors of the most distinguished Merit (tho' it has so happened the present Year) two new Prizes, of ten Diaries each, will next Year be added; to be determined, by Lot, to two of what shall be judged the six best General Solutions of the Ænigmas; provided no such Solution exceeds 36 Lines.

••• All

*** All Contributors to this Diary are desired to send their Letters (Post paid) before the Beginning of May, directed to the Author, at Mr. Richard Hett's, at Stationers-Hall, London.

An Alphabetical Catalogue of the Contributors to this Diary; wherein the Numerical Letters i, ii, iii, &c. shew which Enigmas, and the Figures 1, 2, 3, &c. which Questions each answered; Æ. Q. and P. denote the Solution of the Prize-Enigma, Prize-Question, or the Proposing something new; q. and p. signify the Resolution of the Queries and Paradoxes.

A Rithmeticus 3. P. Mr J. Ash P. Mr W. Bacon 1, 2, 3, 4, 5, 8, 10. Mr W. Bayley all Æ. Mr T. Baker all Æ. P. Mr S. Bamfield all Æ. 1, 2, 3, 4, 5, 8, 9, 10, 12, 15, 16. P. M. W. Bevil 2, 3, 4, 6, 8, 10, 12. P. Mr Ja. Bedford all Æ. 1, 2, 5. Qu. and Par. P. Mr Jos. Bell Æ. Birchovenensis 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12. Mr J. Boston all Æ. 2, 4, 5, 6, p. P. Mr T. Boston most Æ. 1; 3. Mr Abr. Botham all Æ. but ix, xii, 1, 2, 3, 4, 5, 6, 7, 9, 12, 13. P. Mr Jos. Briffall all Æ. 1, par. Mr H. Brown P. Mr G. Brownbridge 1, 2, 3, 4, 5, 8, 9, 10. P. Mr G. Bugeis P. Mr Rob. Butler 1, 2, 3, 4, 5, 7, 8, 10. Mr O'Cavanah P. Mr J. Car 1. Cilia all Æ. P. Mr Lionel Charlton all Æ. and all Qu. but 11th. Mr D. Davis all Æ. P. Mr Jos. Dawson all Æ. but vii, ix, 1, P. Mr John Dodson 1, 6, p. Mr Tim. Drury all Æ. 1, 2, 3, 4, 6, 8, p. Mr Geo. Dunn 1, 5. Mr Ja. Eadon 1, 3, 4, 10. P. Emilia all Æ. 1, Qu. P. Enira all Æ. but ix, 1, 2, 3, 4, q. P. Mr R. Flitton 1, 2, 3, 4, 6, 10, 12. Mr Phil. George 1, 2, 3, 4, 5, 6, 9, 10. Mr R. Gibbons most of the Qu. P. Miss H. Gill all Æ. Mr J. Goodhead all Æ. but i, vi, 1, 3, 4, 10, p. Mr E. Griffiths 1, 2, 3, 6, 7, 10. P. Miss Frances Harris Pr. Æ. and Pr. Qu. Mr T. Harris 1, 10. q. P. Mr Da. Hastings all Æ. but xi, 1, 4, 5. Mr S. Handford all Æ. 1, p. P. Mr W. Harrison 3, 4, 6, 8, 10. Mr Mal. Hitchins iv, v, viii, q. Mr J. Honey 1, 2, 3, 4, 5, 8, 10. Mr T. Hopkinson 1, 2, 3, 4, 9. Mr R. Hulic all Æ. Calcul. Eclipse. P. Mr C. Jones Æ. Mr T. Jones all Æ. Mr Jos. Kent i, ii, iv, v, vii, Æ. P. Mr Steph. King all Æ. 1, 2, 3, 4, 5, 6. Mr T. Knight all Æ. but x, 1, Qu. and p. Mr S. Koit 1, 3, 4, P. Mr T. Lampt all Æ. but ii, vi, xi, par. p. Mr G. Langley i, iii, iv, v, vi, vii, viii, xi, 1, P. Mr J. Lewia 1, p. Mr W. Lifton i, iv, v, vi, vii, x, xi, 1, Qu. P. Mr Jos. Lord all Æ. 1, Qu. W. L. all Æ. p. Mr T. Love 1, 10, p. Mr B. Lydal all Æ. 1, 4, 10, p. Mr J. Manley iii, iv, v, vi, ix. Mr Rob. Marsh all Æ. both Par. Mr Fra. Marshall most of Æ. Mr C. Mason all Æ. P. Mathematicus P. Mr J. Milbourn 1, 4, 6. Mr P. Mingle p. P. Mrs Priscilla Mifferton 1, p. Micromegas Q. P. A. M. all Æ. but the two last. Mr A. Moore all Æ. P. Mr Rich. Morris all Æ. 1, Qu. Mr T. Moss 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15. P. Mr J. Nichois 1, 2, 3, 4, 5, 6, 8, 10. Mr Noble 1. Oedipus Bathoniensis all Æ. Mr J. Odeu all Æ. Mr T. Osborne Æ. p. Mr W. Patrick 1. Mr T. Peart 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13. P. Mr W. Peirce 3. Philo-Pefos P. Mr J. Pickburn all Æ. Mr W. Phipps 1, 2, 3, 4, 5, p. Mr W. Richardson all Æ. 1, 3, P. Mr J. Richardson par. Miss Ann Rickaby all Æ. Mr Ja. Robinson all Æ. 1, 2, 3, 4, 5, 10. Qu. Mr Edw. Robinson all Æ. but ii, vi, xi, 1, Qu. and par. Mr E. Rollason all Qu. P. Mr Alex. Rowe 1, 3, 5, 10. P. Rusticus P. Mr J. Scott 1, 2, P. Mr T. Sharp 1, 3, P. Mr J. Shipman 1, 2, 3, 4, 5, P. Mr Rich. Shillito all Æ. Mr T. Schoia 1, 4, 10, P. Mr H. Season most of the Æ. and all the Queries. Mr W. Spicer 2, 3, 4, 6, 7, 8, 9, 10, P. Mr Geo. Stapley all Æ. 1, 10. Mr W. Stoker 1, 2, 3, 4, 5, 8. Mr Abr. Stone 4, 5, 6. Tim Tam Æ. Mr J. Tapner 1, 2, 3, qu. P. Mr C. Tate 3, 4, 5. P. Mr Fra. Taylor Æ. P. Mr Ja. Tay or all Æ. 1. Mr Isaac Tarratt all Æ. q. p. Mrs Grace Tellow all Æ. but ix. Mr W. Tombs several Æ. 1, 3, 4, 5, 8, 10. Qu. Mr Wal. Trott 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13. P. Mr Cha. Underwood all Æ. 1, P. Miss Polly Walker all Æ. P. Mr H. Watton all but 11th P. Miss S. West Æ. Mr Ch. Wildbore all Æ. 1, 2, 3, 4, 6, 8, 9, p. P. Mr R. Weston 2, 3, 4, 5, 15. P. Mr T. Wilkin 1, 3, P. Mr H. White 1. Mr J. Wiltshire all Æ. but vi, vii, 1, 3, Qu. P. Mr J. Wood Æ. 1, 2, p. P. Mr R. Young 1, 2, 3, 4, 5, 6, 8, 12, P.

The GENTLEMAN and LADY's
PALLADIUM and DIARY,

For the Year of our LORD 1756.

Containing, (*besides what is usual,*)

Many NEW IMPROVEMENTS in SCIENCE, on a Plan quite New: Particularly, perpetual astronomical and chronological Tables; by which the Moon's Age, and Place, for any Month and Day in the Year for ever, are known at Sight; and likewise the Sun's Place, Time of High Water at London, and Moon's Rising and Setting for the same Time.

The DISCOVERY of the LONGITUDE, reduced to PRACTICE, by Observation of the MOON; according to the METHOD first pointed out by the late celebrated ASTRONOMER ROYAL, Dr. EDMUND HALLEY.

The Eighth Number published. *Aut disce aut discere.*
 Humbly inscribed to the ROYAL SOCIETY.

By the late AUTHOR of the LADIES DIARY.

1. WHILE the wide spreading RUMOURS of a WAR,
 Loud echoing o'er the DEEP roll Terror far,



3. Her awful FLAG in Albion's Caule appears,
 And NEPTUNE thus the Fate of France declares!

4. YOUR RIGHT maintain—BRITONS strike home the Blow!
 And sink Ambition to the Shades below!
 MARS shall with ME assist you Hand in Hand,
 And sweep these Swarms of Locusts from your Land!

Printed for S. CROWDER and H. WOODGATE, at the Golden Ball, in Pater-Noster-Row. MDCCLVI.

2. BRITANIA's rous'd to hear her SOVEREIGN call,
 Rise, and revenge the Perfidy of Gaul!

THOMAS HUNTLEIUS

A B

AUTOREM PALLADII ANGLICANI.

NUNCIA Fida mei, te nunc ad Littora confer
Cantia, neve alio devia flecte Gradum.
Fluminis, Urbs, lati medios quod perfluit Agros
Meduaci in Ripâ, Nomine *Roffa*, sita est.
Haud procul Hinc, Turris latè circumspicit Oras,
Stansque in præcipiti, tollit ad Astra Caput.
Degit ibi Vir, cui multam impertire Salutem
Sis memor: Hunc summo gratus honoro colas.
Scrutantem invenies divina Volumina Cæli,
Et Loca Stellarum (Pectora tantus Amor
Instigat Patriæ: Dignas perfolvite grates,
Urania Fili! et quotquot amatis ea)
Aut Patronorum fortè optima quæque legentem,
Quò mox det populo plurima digna Typis,
Nata mea, hoc pete *Castellum*, Vultusque modesto
Hæc ad præfectum Dicta memento dare.
“ Te Dominus salvere jubet, doctissime *Læli*,
“ Omnia sincero Pectore fausta precans.
“ En! venio paucis cumulatam Altaria Donis,
“ Tantula si placiat carpere dona Manu.
“ Si quicquam invenias Auri, tu selige, quæso,
“ Cæteraque abjicias: Hoc meus optat Herus
“ Qui vult,—sed repleo vanis Sermonibus Aures
“ Ergo monet rectè dicere Lingua, *Vale*.”

*Burfordiæ nonis Martiis, Anno
946 Dionovias 1755.*

* * THE Correspondents are desired to direct their Letters to the Author of the *Palladium*, (franked or Post paid) to be left at Mr. Hallifax's, musical Clockmaker, at the Dial, in Fleet-street, London. And the present Correspondents of the *Ladies Diary* directing their Letters to the same Place shall be obliged; There having been *unfair Practises*, and private Notice given, that “they may not send their Letters there,” by Persons who are only pretended Friends to the Proprietor of the *Ladies Diary*; who, for the present, is paid for the Copy-right, but has the Management of the *Diary* and *Letters* taken from her, in order to transfer the Property to where it does not belong. If any choose to pay 3d more Postage than to London, are desired to direct to the Author aforesaid, to be left with the Post-master at Rochester, in Kent, and those Letters will come directly to Hand.

P R E F A C E.

P R E F A C E.

In Nova fert Animus. OVID. METAM.

THE Perpetual DIARY, Royal Chronologer, and other chronological and astronomical Tables make no inconsiderable Part of the *Palladium* for 1756: The Matter in general being Select, and as diversified as the Room we had, this Year, would allow.

We are permitted the Honour, by the present Dean of Durham, (The Hon. and Rev. Doctor Spencer Cowper) to extract whatever we had a Mind from his curious Treatise, entitled, *A New and Compendious Method of Investigating the Parallactic Angle, without Regard to the Nangesimal Degree, with some few Observations on the Lunar Theory.* In a Letter to the Right Hon. the Earl of Macclesfield, President of the Royal Society. Which Permission we look upon as no small Advantage to the Reputation of this Work.

This New Improvement in Astronomy, by Dean Cowper, of finding the Parallactic Angle at the Moon, by the shortest and most improved Method, is doubtless a great Advancement, in the Discovery of Longitude, at Sea, by Observation of the Moon's Distance from a known Star, her Appulses thereto, or her Distance from the Sun in her first and last Quarter; as is well known, and reduced to Practice, by all who are capable of using correct astronomical Tables for that End. The Advantage to Astronomy is hereby more than that acquired by Bishop Ward, when he considered the mean Anomaly of a Planet, equably revolving round the upper Focus, as its true Motion continued in the Orbit; which, though not correct, (as is the Short Way of obtaining the Moon's Parallactic Angle, by Dean Cowper) yet is of excellent Use for applying our Universal and accurate Rule, to find the true Anomaly of a Planet or Comet, from the mean Anomaly given in any Orbit, however eccentric; ascertaining a Comet's true Place at any Time of its Period, without reducing the true to a Parabolical Orbit, according to Dr. Halley, where the Comet is in Motion.

The Sun's Longitudes were correctly computed from Dr. Halley's Tables, and the Right Ascensions and Declinations, for each Day of the Year, in the Royal Diary for 1756, were deduced therefrom by one of his Tables, for that Purpose.

The Moon's Longitudes were computed through all the Equations, by Dr. Halley, for above 300 Days, and afterwards about 140 of those Places were corrected by two or three Lunar Periods (best suiting the Purpose) from *Tabula Lunæ Meridianæ*. The Moon's Right Ascensions and Declinations were deduced from her Longitudes by Spherics, and the Degrees and Minutes of Right Ascension, corresponding to her corrected Longitudes, are marked with * between them.

The

The Times of the *Moon's Rising and Setting* are the most accurate of any yet published.

The Times of the *Moon's Southing* are of considerable Use to find the Longitude at Sea; as well as useful by Land. And where the *Moon's Declination* differs but little in 24 Hours (as is often the Case) it may serve for taking an Observation of the Latitude by Sea or Land; her apparent Semi-Diameter, at that Time, being known, when either her Eastern or Western Limb, having the greatest Altitude, has been observed to pass the Meridian.

The Places of the Planets, at each Conjunction with the Moon, being examined, no Occultation of them, by her, is discovered for 1756—*Mercury* transits the Sun's Disk before Sun-rise on Sunday, November the 7th, begins 1^h 44^m M. Middle 4^h 25^m End 7^h 6^m—An Occultation of *Aldebaran* by the Moon, (very remarkable) happens on Sunday the 5th of December, between 20 and 11 at Night, as inserted.

The Monthly Eclipses of *Jupiter's 1st Satellite* are inserted for discovering the Difference of Longitude betwixt the Meridian of *Greenwich Observatory*, and any other Meridian, where the Times of those Eclipses are observed; which Difference of Time in Degrees is the Difference of East or West Longitude required.—The Rising, Southing, and Setting of any fixed Star, at London, by the Table, may be known from the Southing of the 7 Stars in the *Royal Diary*.

The Days when the Planets are with the Moon are given, for the Use of the *Observer*, furnished with Glasses, who may thereby know where to look for them.—The Days of the Moon's *Perigeon* and *Apogee*, or her nearest and farthest Distances from the Earth are given, when she moves fastest and slowest, or appears biggest or least to the Eye.

The Days of *Perihelion*, and *Aphelion* of the Planets are given, when they move fastest and slowest, are nearest to and farthest from the Sun.

The astronomical (*not ecclesiastical*) Moon's Age, Day of Old Style, corresponding to the *New*; Time of high Water at London, by which the Times at other Ports may be found, and whatever else in Astronomy, that is of Use, we have inserted, for the Satisfaction of the curious Reader. So that as we have not hitherto published any Thing of the Kind so generally useful as the *Palladium* for 1756, it is hoped that we shall find Encouragement in Proportion to the Labour and Expence of our UNDERTAKING, which will be continued on no other Conditions,

Upnor Castle, in Kent,
August 15, 1755.

PALLADIUM and DIARY, 1756.

I

THE GENTLEMAN and LADY'S PALLADIUM and DIARY, For the YEAR 1756.

THE PERPETUAL DIARY; shewing, by the Dominical Letter, the Day of the *Week*, and Day of the Month in any Year, past or to come, according to *New*, or *Old Stile*.

Months.	Days of the Week.							EXAMPLE I. To find on what Day of the Week the 1st of Jan. happens, 1756; the Dominical Letters being DC, (for New Stile) the first serving for January and February, and the other for the Rest of the Year?
January, Octo.	A	B	C	D	E	F	G	
Feb. Mar. Nov.	D	E	F	G	A	B	C	Against January find D,
April, July	G	A	B	C	D	E	F	under which stands 4, 11,
May	B	C	D	E	F	G	A	18, and 25, all the Sun-
June	E	F	G	A	B	C	D	days in that Month, and
August	C	D	E	F	G	A	B	therefore to the Left, (count-
Sept. Dec.	F	G	A	B	C	D	E	ing the Week-Day Co-
	1	2	3	4	5	6	7	lumnns forward or back-
	8	9	10	11	12	13	14	ward) you find 1, 8, 15,
	15	16	17	18	19	20	21	22, 29 the Thursday-Co-
	22	23	24	25	26	27	28	
	29	30	31					

lumn, on which Week-Day the 1st of January happens, 1756, *New Stile*.

EXAMPLE II. The Dominical Letters for *Old Stile* are GF; against January, under G are 7, 14, 21, 28, all the Sundays in January; and therefore 1, 8, 15, 22, 29 is the *Monday-Column*, on which Week-Day the 1st of January happens 1756, *Old Stile*.

EXAMPLE III. To find the Day of the Week, *N.S.* to the 6th of August 1756? Against August stands C, under which 1, 8, 15, 22, 29 are Sundays, consequently the 6th is on a Friday. And so for all other Cases.

SEE our *Universal Table* in *Palladium* 1752, for finding the Dominical Letter, or Letters for any Year, at Sight, either according to the *New*, or *Old Stile*.

Note, We shall publish a more extensive **PERPETUAL DIARY**, being a chronological and astronomical IMPROVEMENT on the **PLAN** of what is allegorically called Sir Samuel Morland's **PERPETUAL**

TUAL ALMANAC. For, Whatever serves for PERPETUITY can no more be an ALMANAC in the *literal*, or real Sense, serving for a Year only, than an ETERNITY can be a YEAR, or a YEAR a MOMENT; but is of a quite different Nature and Duration. And if a *literal Sense* were imposed on Words of *Allusion* and *Allegory*, the *Resemblance*, *Similitude*, or *Idea* of any Thing might be proved the *Thing Itself*; and a fictitious Property, founded in Allusion only, might be transferred, or interpreted into a *real One*. This has sometimes been the Case, when an *astronomical Ephemeris*, (or daily Reckoning of the Planet's Places, or other Accompts) similar to an *Almanac* in the daily Reckoning only, has been interestedly, or ignorantly interpreted into a *real Almanac*, and thereby made subject to *Stamps* and the Cognizance of the *Stationer's Company*, though a Thing of quite different Nature and Use. To which, the *Ephemeris*, and other Matters, are sometimes added, according to the Fancy and Liberty of the *Compiler*, more than what is a *real Almanac*, or indeed of that Kind: The said Company being vested in the Property of *English Almanacs* only.

As all *astronomical Calculations* are more or less accurate, according to the Care and Pains taken by the Calculator, they cannot, for that Reason, come under the Denomination of an *Almanac*, which must be fixed or permanent in its Computations. And such are all the *Month-Days*, *Week-Days*, and *Holidays*, in a *regular Succession*, and Nothing else (except the Church-Moons) can constitute an *Almanac*: For neither *chronological Memorandums*, or *Universal Rules*, by which AN ALMANAC, for any Year, may be made, will come under that Denomination: So that the Use and Property of an *annual Almanac* (Prognostications excepted) are confined to very narrow Limits, as appears by Definition,

**The ROYAL CHRONOLOGER for the YEAR
1756: Being a MEMORANDUM of the Holi-
days, remarkable Days, &c.**

††† The Festival marked with * is preceded by a *Vigil* or *Fast*.
If any of the *Fest-Days* marked * fall upon a *Monday*, the *Vigil* or *Fast* must be kept on the *Saturday* before, and not on a *Sunday*, which is the greatest of Festivals.

JANUARY, xxxi Days.	
1 <i>Circumcision</i>	11 1 <i>Sunday after Epiphany</i>
4 2 <i>S. after Cbr.</i> Old Christ.	13 <i>Hillary</i> , 367
Day. Sir Isaac Newton	14 <i>Oxf. and Camb. Ter. beg.</i>
born 1643 N. S.	15 <i>Exchequer opens</i>
6 <i>Twelfth Day</i> , or <i>Epiphany</i>	17 <i>Old Twelfth Day</i>
8 <i>St. Lucian</i> , Anno 307	18 2 <i>Sun. aft. Epip.</i> <i>Prisca</i> , 45
20 <i>Princess Elizabeth</i> b. 1740	20 <i>Fabian</i> , 353, <i>Oft. Hil.</i>
	1 <i>Return.</i>
	[22 <i>Vincent</i>

- 22 Vincent, 301
 23 Hillary Term begins
 25 3 S. aft. Epiphan. Conv.
 St. Paul
 27 Quind. Hill. 2 Return
 30 K. Cha. II. Mart. 1648-9
 O. S. 12^m. past One

FEBRUARY, xxix Days.

- 1 4. Sun. after Epiphany.
 2 Purification Virg. Mary, or
 Candlemas Day
 3 Blaize, 3 Return
 5 Agatha, 252
 8 5 Sunday after Epiphany
 9 Oct. Pur. 4 Return
 12 Hillary Term ends
 13 Old Candlemas Day
 14 Valentine, 45
 15 Septuagesima Sunday
 22 Sexagesima Sunday
 24 Matthias*
 28 Hare-hunting goes out
 29 Quinquages. or Shrove Sun.

MARCH xxxi Days.

- 1 David. Shrove-Monday
 2 Cedde or Chad. Sbr. Tuesd.
 4 Camb. Commenc. for B.A
 3 1 Day in Lent. Asb Wed.
 5 Pr. Mary of Hesse b. 1722
 7 1 Sund. in Lent. Perp.
 Maur. 252
 10 Ember, 12, 13
 12 Gregory, 604
 14 2 Sund. in Lent
 17 St. Patrick
 18 Edward K. West Saxons
 19 Prisc Louisa Ann b. 1749.
 Joseph
 20 Cuthbert. Day and Night
 equal
 21 3 Sun. in Lent. Benedict, 542
 25 Annuncia. * Pr. Ed. born
 1739. First Quarter Day.
 28 4 Sun. in Lent

APRIL, xxx Days.

- 1 All Fools Day. Camb. lat-
 ter Act
 3 Rich. B. of Chich. 1218
 4 5 Sun. in Lent. Ambrose.

- 5 Old Lady Day
 10 Oxf. and Camb. Ter. ends
 11 Palm Sunday
 15 Sun and Clocks together.
 Maundy Thursday
 16 Good Friday
 18 Easter Sunday*
 19 Alphege, 1006. Eaf. Mon.
 20 Easter Tuesday
 23 St. George. [Low Sunday
 25 1 Sun. aft. East. St. Mark.
 26 Duke Cumber. born 1721
 27 Victory of Colloden, 1746
 28 Oxf. and Camb. Ter. beg.

MAY, xxxi Days.

- 1 Philip and James
 2 Sunday aft. East. 1 Ret.
 3 Invention of the Crose
 5 Easter Term beg. 17 Days
 after Easter
 6 St. Joh. ante Port. Lat. 98
 9 3 Sund. after East. 1 Ret.
 12 Old May Day
 16 4 Sunday aft. Easter, 3 Ret.
 17 Westminster Election
 19 Dunstan, 988
 23 5 Sunday after Easter. Ro-
 gation. 4 Return
 24 Rogation Days 24, 25, 26
 Pr. Fred. William b. 1750
 26 August. 596. Ascen. Day*
 27 Ven. Bede, 673
 28 1 Return
 29 K. Charles II. Nat. & Rest.
 30 6 Sunday after Easter
 31 East. Term ends in 27 Days

JUNE, 30 Days.

- 1 Nicomedes, 41.
 3 Oxf. and Camb. Ter. ends
 4 Geo. Pr. of Wales b. 1738
 5 Boniface, 725
 6 Whit-Sunday
 7 Whit-Monday
 8 Whit-Tuesday
 9 Ember, 11, 12
 10 Princess Amelia b. 1711.
 Princess Carolina b. 1713
 11 Barnabas, 50
 13 Trinity Sunday
 14 1 Ret. Trin. Col. Election

- 16 Sun and Clocks together. Oxf. and Camb. Ter. beg.
 17 St. Alban. *Corpus Christi*
 18 Trin. Term begins 5 Days after Trinity.
 20 1 Sun. aft. Trin. Transf. of Edward K. of W. Saxons
 2 Return
 22 King Geo. II. Inaugur.
 24 Nat. St. John Baptist*. 2d Quarter Day
 25 St. John's Coll. Election
 26 King Geo. II. proclaimed
 27 2 S. aft. Trin. 2 Return
 27 St. Peter, * 68
 30 Buck Hunting comes in, and continues till Holy Rood. Exeter Col. Elect.

JULY, xxxi Days

- 2 Visita. of the Virg. Mary
 3 Dies Comitiour
 4 3 Sund. aft. Trin. 4 Ret. Translat. St. Martin
 5 Old Midsummer Day
 6 Camb. Commencement
 7 Thomas a Becket. Trinity Term ends in 20 Days
 11 4 Sunday after Trinity
 12 Oxford A&T begins
 15 St. Switbun,
 18 5 Sund. after Trinity
 20 Margaret, 243
 21 Mary Magdalen, 84. Prisse Carolina & Matilda b. 1751
 24 Magdalen Coll. Election
 25 6 Sunday after Trinity. St. James 42*
 26 St. Ann
 30 Dog Days begin. Sirius rises with the Sun

AUGUST, xxxi Days.

- 1 7 Sunday after Trinity. Lammas Day
 6 Transfiguration
 7 Name of Jesus
 8 8 Sunday after Trinity
 10 St. Laurence, 259
 11 Princess Augusta b. 1737
 15 9 Sun. aft. Tr. Assumption
 21 Athanasius

- 22 10 Sunday after Trinity
 24 St. Bartholomew, 73*
 28 Austin, 432
 29 11 Sun. after Tr. Beheading of St. John Baptist
 30 Sun and Clocks together

SEPTEMBER, xxx Days.

- 1 Giles, 750
 2 London burnt 1666, O. S.
 5 12 Sunday after Trinity
 7 Eunuchus, 374
 8 Nativity of blef. V. Mary
 9 Dog Days end. Canis Major rises at 3 Morn.
 12 13 Sunday after Trinity
 14 Exaltation of the Cross
 15 Ember, 17, 18
 17 Lambert
 19 14 Sunday after Trinity
 21 St. Matthew, * 90
 22 Equal Day and Night in all the World
 26 15 Sunday after Trinity. Cyprian, 288
 28 Sheriffs of London sworn
 29 St. Michael. 3 Quarter-day. Hare Hunting comes in, and lasts till the End of February
 30 Jerom, 420

OCTOBER, xxxi Days.

- 1 Remigius, 544
 3 16 Sunday after Trinity
 6 St. Faith, 290
 9 St. Dennis
 10 17 Sunday after Trin. Oxf. and Camb. Term begins. Old Michaelmas Day
 13 Transf. of King Edward Conf. 1161.
 17 8 Sunday after Trinity. Etheldred V.
 18 St. Luke
 22 K. Geo. II. crowned, 1727
 24 19 Sunday after Trinity
 25 St. Crispin
 28 St. Simeon and Jude, 64
 31 20 Sunday after Trinity

NOVEMBER,

NOVEMBER, xxx Days.

- 1 *All Saints **
- 2 All Souls.
Elec. at All Souls Col. Ox.
- 3 Cras anim 1 Return.
- 5 Gunpr. Trea. 1605. O. S.
- 6 Leonard, 456. Mich. T.b.
- 7 21 *Sunday after Trinity*
Pr. Hen. Fred. born 1745.
Ld Mayor sworn at Westr.
- 9 K. Geo. II. b. 1683. N. S.
- 10 K. Geo's. Birth-D. kept.
Ld Mayor's Feast-Day L.
- 11 St. Martin, 397.
- 12 Cras mart. 2 Return
- 13 Britius, 421.
- 14 22 *Sunday after Trinity*
- 15 Machutus, 500
- 17 Hugh, 1200
- 19 Octab. Mart. 3 Return
- 20 Edmund, 871.
- 21 23 *Sunday after Trinity*
- 22 Cicilia, 225. O. Mart. Day
- 23 Clement, 92
- 25 Prince W. Hen. b. 1743
Baliol Col. Elec. Quind.
Mart. 4 ret. Catherine
- 28 Adv. S. Mich. T. ends
- 30 St. Andrew*. Prfs. Dow-
ager of Wales born 1719

DECEMBER, xxxi Days.

- 4 Barbary
- 5 1 *Sunday in Advent*
- 6 Nicholas, 342.
- 8 Conception of B. V. M.
- 12 2 *Sunday in Advent*
- 13 Lucy
- 15 Ember, 17, 18

- 16 O Sapientia
- 17 Oxf. & Camb. Terms end
- 18 Prfs. Louisa Q. of Denm.
born, 1724
- 19 3 *Sunday in Advent*
- 21 St. Thomas* 35. Shift. Day
- 23 Sun and Clocks together
- 25 Christmas D.* 4 Qu. Day.
Fox-hunting comes in,
and lasts till Lady Day
- 26 1 S. af. Ch. St. Stephen
- 27 St. John the Evangelist
- 28 Holy Innocents
- 31 Sylvestre, Conf. 335

NOTES FOR 1756.

<i>Dominical Letters, N. S.</i>	D C
<i>Old Stile</i>	G F
<i>Golden Number</i>	9
<i>Epaet</i>	28
<i>Septuagesima Sunday</i>	Feb. 15
<i>Sexagesima</i>	22
<i>Quingma. or Shrove-Sund.</i>	29
<i>Asb Wednesday</i>	March 3
<i>Palm Sunday</i>	April 11
<i>Easter</i>	April 18
<i>Low Sunday</i>	25
<i>Rogation</i>	May 23
<i>Ascension Day</i>	27
<i>Whitsunday</i>	June 6
<i>Trinity Sunday</i>	13
<i>Advent</i>	Nov. 28
All Fridays in the Year are	
Fast Days, except Christmas Day,	
The 40 Days in Lent,	
Four Ember Seasons (3 Days	
each)	
And the 3 Rogation Days.	

NEW ÆNIGMAS.

I. ÆNIGMA 87. By the late AUTHOR of the
LADIES DIARY.

WHERE Terror and Magnificence appear,
Proceed with Awe, with Reverence draw near;
Amaz'd contemplate on the Object given,
The most august, and grandest under Heaven.
Behold the Mirror, search the glassy Plain,
See Art and Nature in Conjunction reign;

See the Stupendous Forest swiftly move,
 And thro' the liquid Air at pleasure rove;
 Furnish'd with Wings, to distant Nations fly,
 Devoid of Fear— all human Pow'r defy;
 Whose Voice, like Thunder, makes a hideous Roar!
 While previous Lightning bids th' adjacent Shore!
 To whom the pointed Steel as Straw is deem'd,
 And ponderous Iron little more esteem'd.
 This, happy Britain, Providence ordain'd,
 While ANNA, GEORGE, and GEORGE successive reign'd,
 To be thy Fortreis, Castle, and Defence—
 Hence Wisdom learn, thy Safety date from hence.
 Mayst Thou by no vile Traitor be betray'd,
 May no ambitious Foe thy Rights invade;
 Repair thy Walls—endear thy Peoples Love,
 Do Justice—fear no Blessing from Above.

II ÆNIGMA 88. By *Amelia*.

THO' all the Elements combine
 To make Mankind appear divine,
 I but of one of them possess,
 Can Tumults raise in ev'ry Breast,
 Make Joy and Grief alternate flow,
 Move all their Passions to and fro;
 Teach any modest Nymph the Way
 To ogle, feign, sooth, and betray,
 Stir the Hero up to Arms,
 Make more enticing *Stella's* Charms;
 Th' *Obdurate* can melt down to Love,
 And all the bright Creation move!
 So great my Pow'r, if *Fame* says true,
 I can Inanimates subdue.
 Even soften Rocks,—the knotty Oak
 Unbend, and Savages invoke.
 Have you not heard the Huntsman's Horn,
 Early salute the grey Ey'd Morn?
 Or did you ever on a Tree,
 A Flock of warbling Linnets see;
 And then descending to the Vale,
 Observe the charming Nightingale;
 All stretching wide their little Throats,
 And pouring forth melodious Notes?
 When this you have, my Deeds proclaim,
 And tell th' enquiring World my Name.

III. ÆNIGMA 89. By *Americana*.

THICK and short is my Body—But when laid up tight,
 Kings and Heroes in me seem to take great Delight;
 And the Reason is plain, since the greatest of all
 Can procure no more Subjects to answer his Call.

When

When I speak, tis like *Stentor*, my Voice is so loud,
That instantly *Thousands* to wait on me croud,
Who all know their Duty, and haste to their Stations,
Not in *Britain* alone, but in most other Nations.
At my Head they take Money, which freely I give,
And they own me for *Regent* as long as they live.
Some repent of the Folly, yet through thick and thin
Oblig'd are to trudge, soon as caught in the *Gin*.
Some rise to great Honour, like Statesmen profound,
And some, 'tis well known, never gain any Ground.
But, like *Charing-Cross-Horse*, wherfix'd there they stand,
Tho' you whip and spur on with the Bridle in Hand.
By beating like Stock-fish, I'm useful to State,
And by bawling aloud I true Courage create.
At this Juncture, dear *Britons*, submit to my Pow'r,
Lest foreign Invaders your Freedom devour.

IV. ÆNIGMA 90. By *Unanimus*.

MY Grandeur view, observe my rich Attire,
My State and Motion singular admire I
Sometimes I perpendicularly move,
Sometimes the Curve and Angle I approve;
Sometimes with lifted Arm and bended Knee,
I fall or stoop, or stand, as you may see;
Anon, with rapid Motion I advance,
Then, on a sudden, form the solemn Dance,
As the Case happens—To increase your Wonder,
My Limbs are sometimes sever'd quite asunder,
My Body quarter'd, and the Pieces rent,
To Cities, Towns, and Corporations sent.
Some to their Gates, some to their Walls repair,
And some dispos'd of as in open Air.
At length, I by some SKILFUL PERSON'S Aid,
Am render'd whole, and once more perfect made;
Resume my former Courage, meet the Foe,
Willing and able to repeat the Blow:
Fly to attack him, without more Delay,
And, for his Insult, make him dearly pay.
From me, my Countrymen, Example take,
And curb th' insulting *Gaul* for *GEORGE'S* Sake;
This Kingdom guard, and Colonies secure,
As long as *British* Courage shall endure;
Confirm the happy Tidings as they roll,
And spread the glorious News from Pole to Pole!

V. ÆNIGMA 92. By *Burfordiensis*.

IN antient times, when *Greece* with *Iliou* fought,
Great was my Service, as old *Homer* taught
In matchless Splendor then I took my Way
Before the *Hero* in the dreadful Day;

And many an Age I ne'er forlook the Wars,
 A faithful Servant to the Sons of *Mars*.
 But Oh! That Fate which must on all attend,
 At length my Laurels fade, my Glories end;
 Discarded now, like some declining Toast,
 I lose the Honour which I once could boast:
 Expell'd the Troops of *England, France, and Spain*,
 I scarce in *Europe* could my Pow'r maintain,
 Had not of late the *Rebels* fought my Aid,
 When marching forth their Neighbours to invade—
 Who fled inglorious, when my Strength they tried,
 Tho' I was then Companion of their Pride:
 From these loose Hints I leave you to explore,
 My Name, ye *Fair*, and tell the Post I bore.

VI. ENIGMA 91. By Mr. *Christopher Mason of Eastburn, Suffex.*

'MONGST warmest Friends we sow the Seeds of Strife,
 Nay interfere betwixt the Man and Wife;
 Tea-Tables haunt, if Scandal be not there,
 In City, Court, and Country we appear.
 Sometimes aërial, as the Wind that blows,
 Sometimes we're Substance, sometimes *raree-Shows*;
 From foreign Parts, like Locusts, we come here,
 Here naturaliz'd, made Natives once a Year.
 The chief Supporters of our motley Crew,
 Are *Fops, Beaux, Fribbles, Petit-Maitres*, too:
 Nay such as often murder Sense in Rhime,
 Who strive to please, but throw away their Time.

WE thank *Adrasfea, Americana, Antidearian, Belinda, Mr. Bevil, Blowfabella, Amarilis, Mr. Eling, Mr. Eades, Felicia, Fidelity, Mr. Huntley, Mr. Hayes, Mr. Hawks, Miss Hybla, Miss Greenwood, Leonidas, Miss Little, Miss Dove, Mr. Christopher Mason, Morpatensis, Mr. Midwinter, Unanimus, John a Nokes, Mr. Newport, Mr. Jos. Orchard, Mr. Orford, Prudentia, Palladiana, Quæstus, Pegasus, Mr. James Robinson, Miss Round O, Miss Hunt, Rosalinda, Salamander, Sampson, Miss Touchit, Vulcan, Sophia Western*, and several other Gentlemen and Ladies, whose Names we have not Room to insert, for the Favour of their Compositions, who shall be obliged as we find Room and Opportunity.

The Q U E R I S T, for 1756.
 NEW QUERIES.

I. QUERE 57. By *Prudentia*.

DEAR Ladies, I ask
 No difficult Task,
 Your Choice shall determine my Fate,
 Pray which shall I take,
 A Miser or Rake?
 Or which do you think the best *Mate*?

II. QUERE 58. By *Honestus*.

IF Courts of *Conscience*, (as they are called) or *Crown-Office* Courts, admit the Depositions of all *Oath-Takers*, for Truth, how is INNOCENCE to be guarded against *Villany*? Or find a Remedy for an *Injury* received?

III. QUERE 59. By *Mr. Humphrey Brown*.

WHENCE do unnatural *Vices* and natural *Evils* proceed?

IV. QUERE 60. By *Casnisticus*.

WHY do immodest *Lawyers* assume the Habit of the reverend *Clergy*?

V. QUERE 61. By *Coram Nobis, Esq.*

WHY are those called *Courts of Justice*, not allowing the *Defendant* the whole Costs of Suit, attending an unjust Prosecution, or an illegal Action brought? And also when the Plaintiff goes to Law and legally recovers his Right, without being paid it?

*** *Whoever sends the best Answers to the following Quere by Candlemas has a Chance, by Lot, for 6 Palladiums.*

PRIZE-QUERE. By *the Archbishop of Toledo*.

WHAT is the apparent Importance and proper Duty of *Man*, by the Nature of his State and Existence?

NEW QUESTIONS.

I. QUESTION 101. By *Mr. Thomas Huntley of Burford*.

LAST *Christmas-Tide*, a large Assembly met,
Of Youths and Maidens, at a social Treat,
And there awhile, their pleasing Moments past,
In various Talk, which turn'd on *Age* at last;
When lo! a Damsel, who adorn'd the Feast,
A *Young Proficient* in these Terms addrest:
"Sir, when I first saw Light, the *Moon* and *Sun*
"Had *five* and *six* revolving *Cycles* run;
"By *Analytics* now my *Age* impart,
"To prove you Master of that *curious Art*".
So spake the fair *Amelia*; but the Youth
Unskill'd in *Cycles*, could not find the Truth.
Ye *Learn'd*, your kind Assistance therefore lend,
To fix the Birth of *Florio's* female Friend.

II. QUESTION 102. By *the same Gentleman*.

Ædibus meis adjacet Hortus sub Formâ Παράλληλον, cujus Latera ad Orientem & Occidentem tendunt; in Centro stat Arbor

20 *Pedes alta, quæ Maii Idibus Anno 1755, tres Horas priusquam Sol meridianum attigerit Umbram in Horti Diagonalem, dimidio Latitudinis æqualem reddidit; Pridiæ autem Calendæ Septembris, post Hor. 1. 44'. 44". quam Sol ad Circulum Meridiei pervenisset, Umbra fuit ejusdem Longitudinis, ac prius ex quibus quæritur Loci Latitudo, cum Horti Mensurâ.*

III. QUESTION 103. *By the Author of the Palladium.*

AS it is of the utmost Consequence, in detaching Regiments, or furnishing Officers for Service, in a confederate Army, that no Regiment or Officer shall be sent on Duty out of Turn, nor Lives be hazarded, but according to Tours of Duty, it is proposed to shew an *exact and general Method*, for detaching Regiments, and furnishing Officers, for Service, so that all and each, by Turns, shall continue to do the nearest Proportion of Duty, in whole Numbers, according to the Strength of the whole Army, and that of each Particular Nation, in the Field. To illustrate which, let it be required to detach, from 17 British, 14 Prussian, 13 Hannoverian, 50 Dutch, and 10 Danish Regiments, the Number of each Nation in the Field, four successive Detachments of 26, 21, 14, and 11 Regiments each, for different Services, how many whole Regiments must be successively taken of each Nation? Or, from 110 Dutch, 44 British, 20 Hannoverian, and 9 Prussian Captains, on the Right Wing at Tournay, 1709, let it be required to furnish 23, 33, and 18 Captains, in successive Order, for three different Services, how many Captains must be successively taken of each Nation? And, to give an EASY and GENERAL RULE for truly answering all Questions of this Nature, (where Fractions are not admitted of) according to the nearest Proportion of whole Numbers, and the Continuance of doing Duty, among the several and respective Regiments and Officers of different Nations?

IV. QUESTION 104. *By Mr. Oliver Lomax, of Woodhill.*

THERE is an Estate of 1000*l.* a Year, at present belonging to two Brothers (*Minors*) A and B, whose Ages are 8 and 11 Years, respectively; Now, if these *Minors*, or either of them, live to be 21 Years of Age, They or He, have thereby a firm Title to sell, or otherwise dispose of the Estate, as may be thought proper.—But, if neither of them arrive at the aforesaid Age, the Estate, in that Case, devolves to C, or his Heirs. Required the present Value of C, or his Heirs' Expectation? Supposing the momentaneous Decrements of Life to be uniform, and the Interest of Money 4 per Cent?

V. QUESTION 105. *By the same Gentleman.*

A proposes to toss up five Guineas, and B four Moldares, and he who happens to have most Heads uppermost, at one Cast, is to be reputed the Winner. And they also propose, that if both happen

happen to have the same Number of Heads, that they are to toss again, continually, till one of them wins: Required their respective Probabilities of Winning, and the Value of their respective Chances before they begin to play?

VI. QUESTION 106. By Mr. William Gardiner, Lincolnshire.

TO determine two Numbers whose Sum shall be a Cube, but their Product and Quotient Squares?

VII. QUESTION 107. By Mr. Wigglesworth.

THE Head, Middle, Diameter, and Length of a Spheroidal Cask of Port Wine, are in the Ratios of 4, 5 and 6, in which Cask is contained the greatest Cylindric Cask possible, holding 167,50482 Gallons of cochiac Brandy: Required the Number of Gallons of Port in the larger Cask?

VIII. QUESTION 108. By Mr. W. Bevil, Lincolnshire.

TO find in what Latitude the Length of the longest Day is three Times the Length of the shortest; and on what Day of the Year, in that Place, the Length of the Day is twice the Length of the Night?

IX. QUESTION 109. By Circumnavigator.

IF a Ship has continually made good a W. S. W. Course from the Lizard for 14 Days' run, at the Rate of 5 Knots and half an Hour for that Time, one Day with another, in what Latitude and Longitude is She then arrived? And what will be the constant Course She must from thence make good to hit the Island of Barbadoes? And what will be the Distance run, when She is arrived at her Port?

Note, The true Answer to the above Question will show, that the common Rules of Navigation, computing by a Run upon one Course, are erroneous, and can only serve for a short Run, of a Day or two: With which it appears that our Gentlemen Navigators are little acquainted, seeing that the same Course on the Globe, kept continually, is a Spiral.

X. QUESTION 110. By Mr. Robert Dickinson, of Lincoln.

IF $\sqrt[n]{x} = 2$, Quere the Value of x ?
Note, $1. x = \text{Nat. Log. } x$.

XI. QUESTION 111. By the Author.

TO determine the Sun's true Place, at Noon, on December 20, 1760, by a general Equation, on the Principles of the Tables, from the Sun's true Place, December 20, 1756. With an Investigation.

Investigation of the Equation of the Sun's true Place, for any Number of Solar Years to come, from 1756?

XII. QUESTION 112. *By Americanus.*

TO find the Time of the Moon's *Southing* and *Setting* in the Island of *Antigua*, Latitude $17^{\circ} 10'$. Longitude 60° . W. on December 1, 1756, from the *Royal Diary*, for the same Year?

XIII. QUESTION 113. *By the Author of the Ladies Diary.*

ABOUT 20 Years ago there happened 5 Sundays in *February*, and no New Moon; in what Year next ensuing will the like happen again?

*** *Whoever solves the following Question, before the 1st of March next, has a Chance, by Lot, for 12 Palladiums.*

PRIZE-QUESTION. *By the Author.*

TO determine, *universally*, the true from the mean Anomaly given, in all Orbits whatsoever, however excentric; the Species of the Orbit being given?

AN Account is given, by *Augustus Cæsar*, See *Pliny's Nat. Hist. Lib. II. C. 24.* of a very remarkable Comet that appeared for some Time, in *September*, 44 Years before *Cbrist*, which again appeared in the Consulate of *Lampadius* and *Orestes*, in the Year of *Cbrist* 531, when *Justinian* was Emperor, described by *Malela*, Author of the *Antiochian Chronicle*, as continuing to be seen for twenty Days; which again appeared in *February* 1106, when *Henry I.* was King of *England*, and was seen for a long Time in the Evening; which again appeared in *November* 1680, and probably will again appear about 2255; the mean Period thereof being about 575 Years. Now (by Prop. 15. Book I. Princip.) $575\frac{2}{3}$ or 69,1475 is the Sem. Transf. Axis of its Orbit, to 1, the $\odot$'s mean Distance from $\odot$; the Perihelion Distance from the $\odot$ is ,000089301 Semi-conjugate ,0133641; To determine from thence the near Place of the Comet in its Orbit in March 1756; i. e. the true Anomaly and Distance from the $\odot$?

Another Comet, called the *Mercury of the Comets*, as describing the nearest Orbit to the Sun, in the shortest mean Period, of $75\frac{1}{2}$ Years, appeared in the Year 1305, about *Easter*, again, in 1380, the Month unknown, again in *June* 1456, again in *August* 1531, again in 1607, lastly, in *August* and *September* 1682, observed at *Greenwich*, and is expected again about the Beginning of 1758: It is required to determine this Comet's true Place in its Orbit, and Distance from the $\odot$, at the End of every 10 Years of its Period; the equated Time of its Perihelion being *September 4th*, 21^h. 22^m?

Note, $75\frac{1}{2}\frac{2}{3}$ = 17,8635 the Semi-transverse, to 1 the $\odot$'s mean Distance from the $\odot$, the Perihelion Distance from $\odot$,5825, Excentricity of the Orbit 17,2810, and Semi-Conjugate 4,5246?

NEW

NEW PARADOXES.

JOHN A STILES IMPROVED.

I. A LAW-PARADOX, in common Descents. By Mr. A. Brooke.

A Man had a Son and a Daughter by one and the same Woman, that by him were brought up and educated (at his own Estate, he had purchased in some Part or other of *England*, or *Wales*) in Principles of *Virtue* and *Loyalty*, for 20 or 30 Years successively, viz. till such Time as they married and left him; which happened about two or three Years before he died. They were also both of them *equally* (or alike) legitimate. And notwithstanding all this, the said *real Estate*, which he had so purchased, as afore-said, devolved to his Daughter, and then to her eldest Son. And although the Son, before mentioned, was not only as lawfully born, but likewise as lawfully begotten as his Sister, or other-wife, they could not be equally (or alike) legitimate: yet he had, nevertheless, no Right to the Inheritance after his Father's Decease. *How then could this be?*

N. B. The Proposer of the above *useful Paradox* observes, that the Miller's and Mr. Moreland's positive Answers to a former Paradox of the Kind, in the *Ladies Diary* for 1754, were egregiously untrue; and that among the great Number of Persons in *England*, that he thinks it so materially concerns their Interest and Properties to study and understand *common Descents in Law*, the greater Part of them, by far, are as totally ignorant therein as the *most illiterate*. And this Gentleman exhorts Persons of all Ranks, having Property in Land, to improve themselves in the common Law of *England*, by consulting the Works of that great Oracle of the Law, Sir *Edward Coke*, especially concerning Descents.

II. PARADOX. By *Civicus*.

*At St. Paul's there's an Object in Sight,
Which at twelve from the Truth, tells you Right.*

The Original of MASONRY.

MOST of our *British Churches* in *England*, of the *Gothic Order*, were built in the Time of *Henry VI.* The then Pope sent over a great Number of Workmen for that Purpose with his *Bulls*, or Commissions, and as they were Masons, that were free under such Bulls, or Protections, and accepted here upon such Occasion, the free and accepted Masons, as they now call themselves, took their Rise from hence.

Mr. Wise, Sublibrarian of the Bodleian Library,
November 1735.

See the Print of the Secret of Masonry, discovered by Curiosa, of Canterbury, sold by T. Wilkins, in Rupert-Street, and likewise at other Print-Shops in London.

ANSWERS to all the ÆNIGMAS in the PALLADIUM for 1755.

I. LIGHT.

II. SILVER CANDLESTICK.

III. PROVIDENCE.

IV. THE SEA.

V. AN ANT.

VI. A TOAD.

VII. A VIPER.

VIII. WATER.

IX. THE POPE.

X. A FOX.

XI. A BOTTLE-SCREW.

XII. A WALKING STICK, OR

XIII. A SCOLD. [CANE.]

Pirate. THE DEVIL.

Mr. Christopher Mafon's Answer to the 9th and Prize- Ænigma.

The Critics may Carp, and yet miss of their Aim,
The POPE and the DEVIL have both an ill Name.

A Dialogue between an Author, and Bookseller, in Answer to all the Ænigmas.

- Author.* WELL, Sir! How did my last Performance sell?
Bookseller. How badly—you'd be scar'd to hear me tell—
Author. Have you not yet got off the first Impression?
Bookseller. No, Sir, one Half is now in my Possession.
Author. Will SATAN let you, Sir, the Truth declare? *Prime.*
 Where Int'rest reigns Truth is a Subject rare!
 Go bid the FOX his Cunning to lay by,
 The TOAD and VIPER take up Wings and fly; 6, 7.
 Go bid the *Chapel* * bring your Numbers true,
 Then I'll believe what Booksellers may do.
Bookseller. You, like the ANT, may labour Night and Day, 5.
 And throw your Labour, with your Time, away,
 While I not having common Sense or Brains,
 Laugh in my Sleeve, and live upon your Pains.
 Where's now the famous Author of the *Diary*?
 That now is *sunk*—I find upon Enquiry.—
 See yonder CANDLESTICK—observe the *Light* 2.
 That PROVIDENCE provides--there think and write! 3
Author. No, Sir, no longer I'll this Trade pursue,
 But *Pirate* turn, and grow as rich as you;
 Furnish'd with BOTTLE-SCREW fill up my Glafs, 1.
 And ev'ry Night with *fresh Enjoyment* pass;
 In neither POPE or Priest intrust Belief, 9.
 By SEA and Land, in my Opinion, *Chief*. 4.
Bookseller. Dispute no more, you know I hate to SCOLD,
 You aim at Reputation—I at Gold.
 With CANE in Hand I every Project try, 12.
 But yet alas! Few Customers will buy.

Author.

Author. Sooner the MEDWAY retrogate shall run, 10. alluding
Or *Martin's Magazine* shall be out-done! *To Water.*
Than *Men of Trade* their Cunning shall forego,
Or suffer Authors all their Schemes to know!

We thank all our other Correspondents for their Variety of
Answers, which we have not Room this Year, to insert.

ANSWERS to the QUERIES in PALLADIUM 1755.

I. QUERE 49, answered by Matilda.

THE French Pocket-Hole may properly be called an *inanimate*
Piece of female Architecture, as it is wonderfully expressive and
significant of its Design! and undoubtedly owes its Invention
to some great *Gallic Genius*! and therefore as far excels the old
English Architecture, in Structure and Position, as it is by much
the better contrived for all *manual Purposes*!

II. QUERE 50, answered by Benjamin Brief, Esq.

IF E. Canning was found not in *Enfield-Chace*,
She plainly was prov'd then in *infinite Space*!

III. QUERE 51, answered by Clericus.

IF Witnesses sworn (without examining into their Charac-
ters) can prove *any Thing*, in Law, and future Witnesses can
prove the contrary, the only Rule for a succeeding Verdict
to be more equitable, than a preceeding one, is, by trying the
Cause over again by *better Judgment*, and thereby determining
on the subservient Oaths, Circumstances and Characters, espe-
cially when Truth is in the Hands of fallacious Lawyers, and in-
terested Prosecutors. Characters well examined before swearing
the Witnesses would be another *good Rule*, for discovering Truth;
as on the Neglect thereof many Lives have been lost.

IV. QUERE 52, answered by Honestus.

LAW-MAKERS and Law-Breakers blame common Offen-
ders, and excuse one another, because they consider the Laws as
only bending to the Vulgar, whom Justice is seen to screen or
punish, according to the Pleasure, Prejudice or Interest of their
Superiors.

V. QUERE 53, answered by Mr. William Glover.

HIS Satanic Majesty is despised as a Foe to human Happiness;
since, according to all Accounts, he has from the Beginning, done
more Mischief than ever can by him be repaired: And even more
Hurt to those who fight and preach against him, than they ever
received Benefit from their Hire! A *Massacre* is despised! though
some are Gainers by the Mischief.

VI. QUERE 54, answered by Oxonienfis.

THE Laws of Nature being *general*, if it rained not at Sea, it could not rain on Land ; which are therefore alike necessary—The Atmosphere, enveloping the whole terraqueous Globe, being the Instrument, whereby not only *Clouds, Hail, Snow*, and *Rain* are formed, to float and descend, for their general and particular Uses, but the Diversity of Winds are therein produced, by the different *Rarefactions, Condensations* and *Currents*, in restoring the different Parts, are all equally useful to the Ends they are destined. They, alike, shew the Bounty of Providence to its Creatures in general. The Rain, at Sea, is as necessary to preserve the Health and Temperature of the Atmosphere there, through which Man and other Animals pass, as that which serves the Occasion of Vegetables by Land.

VII. QUERE 55, answered by Oxonienfis.

EXPERIENCE shews that *Analogy* of Reasoning, from Causes to their Effects, is the surest Guide to remote Truth ; and to direct our Conjectures, with the most Certainty, about Things far removed from our Senses, in the distant Parts of the Universe. And since the periodical State of most sensible Things, near us, is evident to Sense, it therefore *indicates* a periodical State of this Earth, and the whole System to which it is relative, by a Dissolution and Renovation of the same, after a certain Time : Since Nothing cognizable to Sense is capable of Annihilation !

VIII. QUERE 56, answered by Casuisticus.

APPARENT *Contingency* and *Necessity* are the same with respect to the Laws of Nature, and are what come by the Direction of the Divine Will or Energy ; as resulting from the Order of Creation. Necessity and Contingency, and all Causes and Effects whatsoever, happening in the ordinary Course of Nature, are previously directed, as being the natural Consequence of preceding, though not always obvious, Causes. If every human Event, however trivial, resulted like natural Effects, from the Divine Impression, in Consequence of general Laws, previously directed through each *Mode* of Existence, there could be no human Event, but what would be of *absolute Necessity*, and which could not otherwise happen ; but would be as God is, and as all his divine Attributes are, of unavoidable Necessity. — Consequently, there could be no Merit or Blame in human Agency ; and the Doctrine of *Fatality*, destructive of all Justice and Order of Government, would be established.—Hence, we must have more to do in the Production of human Events than we are aware of, to avoid so *pernicious* and *absurd* a Doctrine, contrary to Sense and Experience. So that there is a Distinction between the natural and intellectual World, and likewise between the *Modes* of the Thinking Substance, or the Powers of the Will, and those Causes and Effects which are entirely governed by divine Impression.

All are but Parts of one stupendous Whole,
Whose Body Nature is, and God the Soul!

Poem.

This is where all created Things are of natural Necessity.

*All Nature is but Art unknown to Thee,
All Chance Direction which Thou canst not see.
All Discord Harmony not understood,
All partial Evil universal Good.
In spite of Pride, and in weak Reason's Spight
One Truth is clear, what God directs is right.
The human Will exempt from Nature's Laws,
In spite of Doubt our Good or Evil Draws.*

For the same Reason that God could give us Existence, he could give us a Power and Liberty of thinking and acting, dependent on our Will, and independent on his; as he likewise could give Liberty to all the Rest of the intellectual World, as well as Laws to animate and inanimate Beings, acting by Compulsion through every Mode of Existence.—Hence, human Contingencies (*through all Modes of Existence*) are Events not foreseen, nor directed by the human Will; whereas human Necessity is in Consequence of human Liberty to *compel* an Event.

PRIZE-QUERE 57, answered by Curiosa of Canterbury.

THE Laws of God and Nature require to be obeyed for Support of the Being, Strength, Union, Commerce and Glory of Mankind!

If the *Virtue*, of the Seaman's Needle cannot be restored by the *Magnet* that first touched it, its Use and Activity must be restored by retouching it with some other *Magnet of Virtue*! And since it is evident, that to destroy the Qualities of the *Needle* and *Magnet*, though by Consent of the Owners, cannot be for the Good of a trading Nation, yet it is certainly Right, when they are separated, that each should find its proper Use by some other Union, suiting the Purpose for which they were both designed.

Note, The above LADY has won the Prize, by coming off Conqueror!

We thank all our other Contributors for their several Answers, which we had not Room to insert.

ANSWERS to the QUESTIONS in the PALLADIUM for 1755.

I. QUESTION 88, answered by the late Author of the Ladies Diary.

BY Experiments, a solid Inch of Wax weighs about
50372239, Ounce Troy, whence 3 Drams, 22 Grains of Wax

≈ 83544694 , &c. Inches. Put $p = 2,598076$, and $x =$ Side of a Hexagon, then $px^2 =$ Area. Let $a = 20\frac{1}{2}$ Cells, occupying a Square Inch of the Comb, then apx^2 (Hexagons) $= 1$ Inch

Square, whence $x = \sqrt{\frac{1}{ap}} = 1,37867$ Inches, the Side of

an exterior waxen Hexagon; and $\frac{1}{a} = .049327 =$ the exterior Su-

perficies, at Top or Bottom of each Cell, taking in the Thickness of the Cell.—Now, $20\frac{1}{2}$ Cells: 1 square Inch :: 424 Cells: 20,93827 square Inches, $= b$, the Superficies on each Side of the Comb, taking in the Thickness of the Cells; and is also the Value of the Superficies of the Partitions in the Middle, on which the opposite Cells are erected, and by which the Honey, on each Side of the Comb, is separated. Put $y =$ the cellular Thickness every where; then $by =$ Content of the Partition; and $20,93827 \times .37 \times 848$, or $20,93827 \times .37 \times 2 = 15,4943198 =$ (solid Inches of the opposite Cells) $+ by =$ Solidity of the whole Comb and Cells.

To find the Capacity of all the interior hexagonal Cells?

The Height of a greater Equilateral Δ is $\sqrt{\frac{1}{ap}} \times \frac{1}{2} = .18$

9396268, &c. $= b$, the Height of a less Equilateral Δ (in the outer and inner Hexagons) is $b - y$. Say, $bb : \frac{1}{a}$ (Area greater

Hexagon) : $b - y^2 : \frac{b - y^2}{a \times bb}$ the Area inner Hexagon; conse-

quently, $.37 \times 848 \times \frac{b - y^2}{a \times bb}$ (put $= .37 \times 848$) is the Capac-

ity of the inner Cells. Therefore $s + by - e \times \frac{b - y^2}{abb} =$ Content,

Wax $= 83544694 = w$. Whence $yy - \frac{2b + babb}{e} y =$

$\frac{sa - wa + e}{e} \times bb$, and $yy - \frac{(d)}{2580567} y = - \frac{(f)}{.0007686495}$.

Hence $y = \pm \sqrt{\frac{d^2}{4} - f} : + \frac{1}{2} d = .00301386$ the Content of the Honey contained in the Cells 14,7020379 Inches, and of the whole Comb and Cells 15,537484. Q. E. I.

Note, Dividing the Content of the Wax, by Weight, $= 83544694$ Inch, by $.6615122 \times 424 (= 280,481173)$ the outward Superficies of all the Cells, the Quotient is, $.002978$, &c. for near Thickness; but would be more, had the Content of the Wax been divided by a less, or mean Superficies, (not to

be had without a Process) and shews that the above Answer is probably right. *Chesterfieldensis* solved it otherwile.

II. QUESTION 89, answered by *Chesterfieldensis*.

SHROVE-SUNDAY falls the farthest from *Christmas*, when *Easter* falls the highest it can.—By *Tables*, in the Common Prayer Book, *Easter* so falls betwixt 1755 and 1899, inclusive, when the *Golden Number* is 6, and *Dominical Letter* C; and, by comparing the *Golden Numbers* with the *Dominical Letters* (see *Palladium* 1752) the Year following 1755, will be 1886, for Answer.—

Mr. Oliver Lomax, of Woodhill, answers it exactly in the same Manner.

Chesterfieldensis puts e for the Year greater than 1755, till the Year 1799; viz. $\frac{e+1-6}{19}$ = whole Number = y , $r=3.2.1$,

as you find Remainders, by taking the $\frac{1}{4}$ of any Year; then

$$\frac{e}{7} + \frac{e-r+4}{28} - \frac{5}{7} = \text{which Numb.} = x. \text{ Hence } e = 19y + 5,$$

$$\text{and } e = \frac{28x+16+r}{5}, \text{ and } x = \frac{95y+9-r}{28}; \text{ here, taking } y$$

a wh. Number, greater than 92 (because $92 \times 19 + 5 = 1753 < 1755$ till 1800) it does not answer.—For the next Century, Let

$$y \text{ stand, and } \frac{e}{7} + \frac{e-r}{28} - \frac{7}{5} = \text{a wh. Number,} = x, \text{ then,}$$

$$\text{proceeding as before, } e = \frac{28x+20+r}{5} = 19y + 5, \text{ and } 95y + 25$$

$$= 28x + 20 + r, \text{ and } x = \frac{95y+5-r}{28}, \text{ where, supposing } y \text{ a}$$

whole Number, greater than 94 (because $94 \times 19 + 5 = 1791 < 1800$) the next Value of y , viz. 99, will answer the Question, viz. 1886 for the Year. Q. E. I.

Mr. John Dodson, *Mr. James Robinson*, and some others, answered the same.

III. QUESTION 90, answered by *Mr. Oliver Lomax*.

Lat. Liz. $49^{\circ} 55'$	} $s = \text{fine } 49^{\circ} 55'$. $r = \text{fine } 32^{\circ} 20'$, $p =$ $\frac{2,302,585}{2}$, $d = \text{Log. } 56,16666 + \text{Log.}$ $\frac{0,01745329}{2} = -1,9921286$; $x = \text{Tangent}$ of the required Course? Then, by Problem 12th, <i>Mr. Stone's</i> Appendix, I get this Equation. $\text{Log. } x = d -$
Longitude $12^{\circ} 56'$	
Island <i>Bermudas</i> .	
Latitude $32^{\circ} 20'$	
Longit. $316^{\circ} 40'$	

$\text{Log. } p - \text{Log. } \text{Log. } 1 + s + \text{Log. } 1 - r - \text{Log. } 1 + r - \text{Log. } 1 - s$
 $= 0,3765278$; whence the required Angle is $67^{\circ} 12' 25'' \frac{3}{4}$.
But, by a Table of meridional Parts, and the common Proportion, the Angle is $67^{\circ} 26'$.—Remark, This Question, in general, is not understood; most Navigators supposing that the Course

at the Place of Departure, *viz.* the *Lizard*, is the Course all the Way, which has been a general Mistake among Sea-faring People; whereas the Course, to sail on the Arch of a great Circle (*which is the nearest Way between any Ports*) continually varies.—In this Question the Ship sailing continually on the same Course, to hit the Island, keeps her Way on a *Spiral*; as the same Course continually kept will carry a Ship from her Place of Departure to the North or South Poles, according as she sails Northward or Southward; but not directly either.

Mr. *Bevil* makes the Tangent of the Course, (*which is only the Course at the Place of Departure*) $68^{\circ} 35'$. by Mr. *Emerson's* Navigation.—*Chesterfieldensis*, by great Circle Sailing, makes the $\angle$ of Position at the *Lizard* $88^{\circ} 26'$. and nearest Distance 2666,9 Miles.—But, by a *Spiral*, he makes the constant Course all the Way, from the *Lizard* to *Bermudas* $69^{\circ} 25'$. 12". S. Westerly, 3029,76 Miles. And from *Bermudas* to the *Lizard* the constant Course all the Way, $63^{\circ} 40'$. 22". N. Easterly 2401,35 Miles, the Course back being the less by $5^{\circ} 44'$. 50". according to his Process.

IV. QUESTION 91, answered by Mr. William Smith, of Irthlingborough.

LET $x=y$, and $x+y=A$ and B 's Shares; then $2x=C$'s; also $5x+y=19$; and $6x^2+2y^2=78$. $=2a$; by Question whence, $y^2=s^2-10x+25x^2=a-3x^2$, and $x=\frac{1}{28} \pm$

$\sqrt{\frac{28a-3s^2}{784}}=3.5$, whence the Ladies' Shares are 2, 5, and 7 Pounds, respectively.

Analytica Explicatio à Dom. Thom. Huntleyo. — Substituamus x pro Nummis qui adolescentulæ primæ, x pro Nummis qui secundæ obvenierunt, eritque $x+x$ portio quam tertia sortito est: Et ex Conditionibus Problematis oriuntur Æquationes hæc duæ, $2x+x=19$, & $2x^2+2xx+2x^2=78$, de priorè quadratâ subduc posterioris duplum, & Æquatio erit Residua $8xx+52=205$, unde $x=\frac{205-5x^2}{8x}=\frac{209-3x}{2}$, et per Reductionem pro-

ditur $=\frac{76}{14} - \frac{76 \times 76 - 410 \times 14}{14 \times 14}^{\frac{1}{2}} = \frac{76}{14} - \frac{6}{14} = 5$ l. quæ pecunia Virgini *B* obvenit, adeoque x five Portio *A* = 2l. et $x+x$, five Portis *C*, = 7l. Q. E. d.

Mr. *J-bn Dodson*, Mr. *Oliver Lomax*, *Chesterfieldensis*, Mr. *John Wigglesworth*, Mr. *W. Bevil*, Mr. *Robert Eling* of *Henly*, upon *Tbames*, The Proposer, Mr. *Fish*, and Abundance of others, curiously solved the same.

V. QUESTION 92, answered by Mr. Oliver Lomax, of Woodhill.

THE Proposer, I imagine, means that the Difference between the Hypothenufe and Base, must be in a given Proportion to the Diameter

Diameter of the inscribed Circle, which let be 1 to n . — Put x = the Hypotenuse, z = Perpendicular, y the Base, and b = 40733760. — Then $x+y-z$ = Diameter of the inscribed Circle; and $z-y : x+y-z :: 1 : n$.

The 1st, $nx - ny = x + y - z$.

2d, $z^2 = x^2 + y^2$, by 47. c. 1.

3d, $x^3 \times y + x^2 + y^3 \times x + x^2 + x^3 \times z - y^2 = 3$.

Let $x+y=2s$, and $x-y=2a$, $\therefore x=s+a$, and $y=s-a$. Now substituting for x and y in the 1st and 2d Equation, by an easy

Process, $x = 2n+2 \times a$, $y = n+1^2 - 1 \times a$, and $z = n+1^2 + 1 \times a$, substituting for x , y and z , in the 3d Equation, and we shall

have, $\frac{n+1^2+1}{3} \times \frac{n+1^2+2n+1}{2} \times a^5 + \frac{n+1^2-1}{3} \times \frac{n+1^2+2n+1}{2} \times a^5 + 2 \times \frac{n+1}{2} \times a^5 = b$.

Whence generally $a = \frac{b}{\frac{n+1^2+1}{3} \times \frac{n+1^2+2n+1}{2} + \frac{n+1^2-1}{3} \times \frac{n+1^2+2n+1}{2} + 2 \times \frac{n+1}{2}}$

$\frac{b}{\frac{n+1^2+1}{3} \times \frac{n+1^2+2n+1}{2} + \frac{n+1^2-1}{3} \times \frac{n+1^2+2n+1}{2} + 2 \times \frac{n+1}{2}}$

If $n=1$, then $y=15,148,575$, $x=20,1981$, and $z=25,247,625$.

Mr. Smith's and Chesterfieldensis's particular Solutions gave the same Numbers as above, being all true.

VI. QUESTION 93, solved by Mr. John Wigglesworth.

LET $CD=10=a$, $BD=x$; Then

$\sqrt{a^2+x^2}=BC$, and by sim. Δ 's

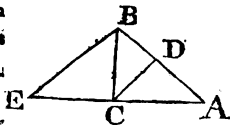
$x : a :: a : \frac{a^2}{x} = AD$, whence $x + \frac{a^2}{x} = AB$, and $x + \frac{a^2}{x} = AE$

$\sqrt{a^2+x^2} = AB + BC$ is to be a Minimum; by Question. In Fluxions,

$x - \frac{a^2 \dot{x}}{x^2} + \frac{x \dot{x}}{\sqrt{a^2+x^2}} = 0$, whence $x^4 + a^2 x^2 = a^4$, and

$x = a \times \sqrt[4]{5-1}^{\frac{1}{2}} = 7,861$; Hence $AB = 20,582$, $BC = 12,72$, $AE = 32,36$, the Length of the Beam: W. W. R.

Mr. Robinson solved it in like Manner and Numbers; as did Mr. Oliver Lomax, Mr. John Boscum, and Mr. Bevil.



VII. QUESTION 94, *solved by Mr. Oliver Lomax.*

Put $\frac{7970}{2} = r$, 400 Feet = Mile 0,07574 = s , 6,2831853 = c , and x = the Height of the Spherical Segment. Then, by 47.e.1, and 4.e.6, we may easily find $x = \frac{rs}{r+s}$ $\therefore cr \times$

$\frac{rs}{r+s} \times 640 = 1213682,56$ Acres—The Answer. — Mr. Thomas Huntley, by a double Proof (sent us in *Latin*) finds the Acres 1202995 only; giving us THIS COROLLARY, he inserts. “That the Convex Surfaces of the Segment of any Sphere is equal to the Circumference of the whole Sphere multiplied into the Height of the Segment.”

Mr. Robinson makes the Number of Acres 1208348.1 R. and 18 P.—Mr. Wigglesworth 1213830,46 Acres.—Chesterfieldensis 1213967,33; he giving us THIS COROLLARY from the Method of Fluxions. “As the Superficies of any Sphere is to its Diameter, so is the Superficies of any Segment thereof to its versed Sine.” Whence the Distance of a Spectator's Eye, from the Earth, viewing any Part of the Surface (p) will be $\frac{2r^2}{pr-2r} =$

$\frac{2r}{p-2}$, and when $p=3$ (to answer Amo-Erixine's Quest.) the Distance will be $2r=7970$ Miles, agreeing with Mr. Smith's Solution to the second Part. — Mr. James Robinson observes, to answer this second Part, “The Chord of half the Arch of the Segment is the Radius to a Circle, whose Area is equal to the Convex Surface of that Segment.” — Mr. Randles answered the same.

Mr. Wigglesworth (putting x the Distance from the Earth's Centre to a Spectator's Eye, beholding p , Parts of its whole Surface) finds, $x = \frac{pr}{p-2}$, (r being Radius). Now putting $y+r=x$, then $y+r = \frac{pr}{p-2}$ and $y = \frac{2r}{p-2}$, as above, the Distance from the Surface as before.—Mr. Bevil computes the Number of square Miles seen, from the Spire 1896,8193, nearly 1213830, Acres, as by Mr. Wigglesworth. — Mr. Eling makes the Number of Acres 1213990, 1 R. 24 P. and the Distance of the Spectator's Eye (to see the one third of the Earth's Surface) the same as before.

VIII. QUESTION 95, *answered by the late Author of the Ladies Diary.*

ALL Things (Quantities, Qualities, &c.) being relative, $x=2$ may be relatively taken for the Standard Fluxion of

x^m flowing uniformly, as $\dot{x}$ for the Standard Fluxion of x flowing uniformly; whence the Fluxions of all other Quantities are relatively compared. One $\frac{1}{2}$, two $\frac{1}{2}$'s, three $\frac{1}{2}$'s, &c. may be taken for 1, 2, 3, 4, or those for 2, 4, 6, 8, having the same Relation, or *Ratio*, with one another, whether in Fluxion, (which is Velocity) or in numeral or geometrical Quantity.

If x^m flows uniformly, instead of x , and $\dot{x}$ be put for the Fluxion of x^m , instead of $m x^{m-1} \dot{x}$, where $\dot{x}$ is put for the Fluxion of x , then $x + \dot{x}^n = x^{mn} + n x^{mn-m} \dot{x}$, &c. will be the two first Terms of the Series of the *Binomial*, whose Increment is $\dot{x}$; whence deducting x^{mn} , the first Term, the relative Fluxion thereof will remain, viz. $n x^{mn-m} \dot{x}$ to $\dot{x}$, the Fluxions of x^{mn} , and x^m . In both which, if $m=1$; then $n x^{n-1} \dot{x}$ to $\dot{x}$, the Fluxions of x^n , and x , as usual.

Or, *Fluent* x^m ————— *Fluent* x^{mn} .

Relative Fluxion $m x^{m-1} \dot{x}$ to relative Fluxion $m n x^{mn-1} \dot{x}$,

with $\dot{x}$ Fluxion to x *Fluent*. Dividing by $m x^{m-1}$

— As $\dot{x}$ — to $\frac{m n x^{mn-1} \dot{x}}{m x^{m-1}} = n x^{mn-m} \dot{x}$, as before.

or 2 — to $n x^{mn-m} \dot{x}$ 2.

as 1 — to $n x^{mn-m} \dot{x}$ required,

When $m=3$, $n=2$, x^m and x^{mn} , become x^3 and x^6 , whose Fluxions are 1 to $2x^2 \dot{x}$, from above; i. e. $3x^2 \dot{x}$ to $6x^5 \dot{x}$, as 1 to $2x^3$ (by Division, by $3x^2 \dot{x}$). Let x be what it will.

Corollary.—Fluents x^m ————— x^{mn} .

Fluxions $m x^{m-1} \dot{x} : \dot{x} :: m n x^{mn-1} \dot{x} : n x^{mn-m} \dot{x}$

Fluxion x^m , ($m=3$, $n=2$.)

Fluents x^3 ————— x^6

Fluxions $3x^2 \dot{x} : \dot{x} :: 6x^5 \dot{x} : 2x^3 \dot{x}$, Fluxion x^6 ,

as before.

N. B. The Relation of the Fluxion, or Velocity, is seen to be universally the same.

IX. QUESTION 96, answered by Mr. Oliver Lomax.

$21x^2 - 3x^2$ by Question. Here $5x^7 \times 74x$. Let $5x - b = 3$, then $x^2 = 25x^2 - 10bx + b^2 = 21x^2 - 3$, and $10bx - 4x^2 - b^2 = 3$. Here $x = 2b$, and $b = 1$. $\therefore x = 2$, and $x = 9$. Again, let $x = 2b + c$, then $3b^2 - 6bc - 4c^2 = 3$. Here $3c^2 - 7c - 2 = 0$. Let $3c - d = b$, then $9c^2 - 12cd + 4d^2 = 3$. Here $3d^2 - 7d - 2 = 0$. Let $3d - r = c$, then $12d^2 - 18dr + 5r^2 = 3$. Here $2r^2 - 7r - 3 = 0$. Let $r + s = d$, then $6r^2 - r^2 + 12s^2 = 3$. Here $8s^2 - 7s - 3 = 0$. Let $8s - t = r$, then $108n - 4s^2 - t^2 = 3$. Here $s = 2n$, and $n = 1$: Whence $s = 2$, and $x = 999$. Note, $108n - 4s^2 - t^2 = 3$, is the same Sort of Equation as that whereby the first Value of x was found, consequently the general Method of Investigation is obvious. As for the next Squares, $s = 218$, $\therefore x = 23978$, and $x = 109881$.

X. QUESTION 97, answered by Chesterfieldensis.

LET $49 + r + e =$ any Year greater than 1755, where $q =$ Quotient after dividing Centuries of Years by 4; $r =$ Remainder, and $e =$ the Tens and Units in the same Year. Let $p =$ the Golden Number answerable. Then the *Epaet* will be

$$\frac{275p - 17r - 43q - 25d + 86}{25} = 11p - d \text{ min. } \frac{17r + 43q + 86}{25},$$

where $d =$ the 30 or 308 to be rejected. And the *Paschal Moon* =

$$\frac{1186 - 275p + 17r + 43q + 25d}{25} = \frac{1186 + 17r + 43q}{25} - 11p + d,$$

some whole Number greater than 20 and less than 50, or even 49, when p is greater than 11: By which *Theorems* the *Epaet*, and *Paschal Moon*, depending thereon, may be found for ever. — Hence, the following Table shews the *Sunday-letter* and *P. M.* (*Paschal Moon*) for each Year, when it falls on a *Sunday*, for ever. For, although the *P. M.* will always be some of the Numbers in the Table, the *Letter* will ever be different unless the same falls on a *Sunday*. Example. The Letters are DC for 1755, and *P. M.* is 46, which is under G and not C, and consequently not upon a *Sunday*.

A. B. C. D. E. F. G.
 26. 27. 21. 22. 23. 24. 25 } *March*.
 28. 29. 30. 31.

33. 34. 35. 36. 37. 38. 32 } *April*.
 40. 41. 42. 43. 44. 45. 39 }
 47. 48. 49. 46 }

Next, from 1755 to 1899 inclusive I find

$$\frac{1186 + 17r + 43q}{25} = 55, \text{ and}$$

$$\frac{17r + 43q + 86}{25} = 11; \text{ the}$$

Epaet and *P. M.* continuing so long invariable.

From

From	To	They =
1900	2199	56 & 12
2200	2299	57—13
2300	2399	58—14
2400	2499	57—13
2500	2599	58—14
2600	2899	59—15
2900	3099	60—16
3100	3399	61—17
3400	3499	62—18
3500	3599	63—19
3600	3699	62—18
3700	3799	63—19
3800	4099	64—20
4100	4199	65—21
4200	4499	66—22
4500	4699	67—23
4700	4999	68—24
5000	5099	69—25
5100	5199	70—26
5200	5299	69—25
5300	5399	70—26
5400	5699	71—27
5700	5899	72—28
5900	6199	73—29
6200	6299	74—30
6300	6399	75—31
6400	6499	74—30
6500	6599	75—31
6600	6699	76—32
6700	6799	77—33
6800	6899	76—32
6900	6999	77—33

To find all the Sundays between 1755 and 1899; on which the P. M. falls.

By the last Theorem. When $p=1$, then

$$1186 + 17r + 43g - p = 11$$

$+d =$ P. M. answering to E in Table.

$f=2$, then $55-22+0=33$, answering to A. $p=3$, $55-33+0=22$, D. $p=4$,

$55-44+30=41$, B. $p=5$, $55-55+30=30$, E. $p=6$, $55-66+60=49$, C.

$p=7$, $55-77+60=38$, F. $p=8$, $55-88+60=27$, B. $p=9$, $55-99+90=46$, G. $p=10$, $55-110+90=35$, C.

$p=11$, $55-121+90=24$, F. $p=12$, $55-132+120=43$, D. $p=13$, $55-143+120=32$, G. $p=14$, $55-154+120=21$, C. $p=15$, $55-165+150=40$, A. $p=16$, $55-176+150=29$, D.

$p=17$, $55-187+180=48$, B. $p=18$, $55-198+180=37$, E. $p=19$, $55-209+180=26$, A. And thus the P. M. may be found for ever.

To find the Years correspondent to these paschal Moons and dominical Letters. See Palladium for 1752, there, in Mr. Hoar's universal Table for finding the dominical Letter, under the given Centuries and against the odd Years, viz. against E under 1800 I find 42, which joined to 1809 has 2 Golden Number. Against A under 1800 is 82, having 2, Golden Number. Against D, under Ditto, is 7. Against B, under Ditto, 8. Against E, under Ditto, 28.

Against C, under Ditto, 86. Against F, 11. Against B, 31. But against B, under 1700, I also find 74. Against G, and under 1800, 32. Against C, under Ditto, 52. Against F, 72, against D, 35.—But against D, under 1700, 78. Against G, and under 1800, 55. But against G, under 1700, 98. Also against C, under 1800, 75. Against A, under Ditto, 76.—Against A, under Ditto, 99.—So that 1862, 1882, 1807, 1808, 1828, 1886, 1811, 1831, 1774, 1832, 1852, 1872, 1835, 1778, 1855, 1798, 1875, 1876, 1801, 1896, 1895, 1879, 1889, are all the Years between 1755 and 1899 inclusive when the P. M. falls on a Sunday. And, by proceeding thus, the first hundredth Leap-Year contains 60 Years; the 2d 58, the 3d 60, the 4th 57, the 5th 55, the 6th 66, the 7th 64, the 8th 58, the 9th 50, the 10th 57, the 11th 57, the 12th 49, the 13th 54, and the odd 44 Years, 6 Years; being in all 751 Years.

Q. E. I.

XI. QUESTION 98, answered by Mr. Oliver Lomax.

$y - z^2 = \square$
 $x - y^2 = \square$, by Quest. Let $x = \frac{1}{d^2+1}$, and $y = x^2 - \frac{2dx}{d^2+1}$
 $+ \frac{1}{d^2+1}$. Then $y - z^2 = x^2 - \frac{2dx}{d^2+1} + \frac{d^2}{d^2+1} = \square$,
 whose Side is $x - \frac{d}{d^2+1}$, and $x - y^2 = \frac{1}{d^2+1} - x^2 - \frac{2dx}{d^2+1}$
 $- \frac{1}{d^2+1}^2 = -x^4 + \frac{4d}{d^2+1} x^3 - \frac{2}{d^2+1} x^2 - \frac{4d^2}{d^2+1} x^2 +$
 $\frac{4d}{d^2+1} x + \frac{d^2}{d^2+1} = \square$. Let its Side be $\frac{3x^2}{d} - \frac{2x}{d^2+1} -$
 $\frac{d}{d^2+1}$, which squared, and the Equation properly ordered, we
 shall have $\frac{9}{d^2} x^4 - \frac{12}{d^2+1} \times d x^3 = \frac{4d}{d^2+1} x^3$, whence $x =$
 $\frac{d^2+3 \times 4d}{d^2+1 \times d^2+1}$, which is a *General Expression*. Consequently,

If $\left\{ \begin{array}{l} d=1 \\ d=2 \\ d=3 \\ d=4 \end{array} \right\}$	The required Sets will be	$\left\{ \begin{array}{l} \frac{1}{2} - \frac{17}{50} \\ \frac{1}{3} - \frac{1069}{4225} \\ \frac{1}{15} - \frac{13}{50} \\ \frac{1}{17} - \frac{42241}{180625} \end{array} \right.$
$\&c.$		$\&c.$

The Proposer, by a *different Method* of Substitution, finds the
 Sets, answering the Conditions of the Question, $\frac{4}{1025}$ and $\frac{16}{1025}$;

$\frac{4}{65}$ and $\frac{16}{65}$; $\frac{1}{13}$ and $\frac{2}{13}$; $\frac{1}{5}$ and $\frac{2}{5}$. The Result of his
 Equations (compared with the above literary Quantities) is

$$y - z^2 = \frac{\frac{1}{2}b^2 - b^2}{\frac{1}{4}b^{12} + 1}, \quad x - y^2 = \frac{\frac{1}{2}b^2}{\frac{1}{4}b^{12} + 1}, \text{ two Squares; and}$$

$y =$

$y = \frac{b^2}{\frac{1}{2}b^{12}+1}$, $z = \frac{b^4}{\frac{1}{2}b^{12}+1}$, who likewise assumes other Values for y and z , after finding the 1st Set, by assuming $b=3$, and then $b=1$. Q. E. I.

XII. QUESTION 99, answered by the late Author of the Ladies Diary.

TO determine the true but different Length of the Solar Year, by a Revolution of the $\odot$ through any 12 Signs, from any Part of the Ecliptic to its next Return to the same; or, to find the Equation of the mean to the true Year?

RULE. Such Decrease of the mean Anomaly of the $\odot$ must be found at the Completion of any one true Solar Year, as may give the Equation, more to be added to the $\odot$'s mean Motion for that Time, as much as is the whole Equation of the mean to the true Year, to be subtracted from the 12 Signs, or that will give as much of the $\odot$'s Equation, more to be subtracted from the $\odot$'s mean Motion for the true Year, as is the Equation of the mean to the true Year, to be added to the 12 Signs.

By this Means, the Diff. of $\odot$'s Equation, for 12 Signs of true Motion, and the whole Equation of the mean to the true Year, having contrary Signs will counterbalance each other.— Put $a=60^{\frac{2}{3}}''$ of a Degree, moved by $\odot$'s Apogee, which is the Decr. of the $\odot$'s mean Anom. for a mean Year (of 365^d. 5^h. 48^m. 54^s. 46th. &c.) answerable to 12 Signs of the $\odot$'s mean Motion. Let $\pm x''$ of Deg. = $\odot$'s mean Motion, more or less than 12 Signs; being the Equation of the mean to the true Year; d'' = Diff. $\odot$'s Equation, for 1^o Decr. of the $\odot$'s mean Anom. for any Time less than 2 Hours, in which the $\odot$'s Apogee differs not 1^{'''} Degree.

Say —: (Sec. Deg.) $\pm d$ (Secs. Diff. $\odot$'s Equation)
: —: (Dec. Anom.) $\pm a$ (Secs. Decr. $\odot$'s mean Anom. for the 12 Signs true Motion): $\pm x$ (Secs. Dif. $\odot$'s Equation balancing $\pm x''$)
Extremes and Means, $\pm : x :: \pm d a - d x$. Hence, $\pm x = \frac{\pm d a}{1 \pm d}$; whence these Proportions, 1st x'' (3600'') $+ d : d'' :: a''$ ($60^{\frac{2}{3}}''$) x'' Deg. when the true is greater than the mean Year.

And 2d, $1 - d'' : d' :: - a'' : - x''$ Deg. when the true is less than the mean Year.

COROLLARY. The Decr. of the $\odot$'s mean Anom. for every mean Year being 1^o. 0^m. 40^{'''}. 60 Times which = 1^o. 0^m. 40^{'''}. it is evident (since the Equation of the mean to the true Year is had from the Proportion of 1^o. Decr. of the $\odot$'s mean Anom.) that this Rule will serve for about 60 Years, before the Decrease of Anomaly alters 1^o.—Hence, the Number of Years since the $\odot$'s Entrance into any Sign, or Point of the Ecliptic, being multiplied into x'' or—
 x''

2^d in Time, as the Sign directs, and added to or subtracted from the mean Time of his Entrance into that Sign, (by Table, Palladium 1750, p. 53, of the mean Motion of Seasons, computing from the first true Time) the Sum or Dif. will be the true Time of present Entrance into the same Sign, or Point.

EXAMPLE. By Dr. Halley's Tables the ☉'s true Place at Noon, May 30th, 1754, was Π 8°. 51'. 27". 37". and ☉'s Apogee 3°. 8°. 33'. 8". 5". correctly.

☉'s mean Anomaly.					☉'s Equation.	
10 ^s .	29 ^o	20 ^o .	3 ^h .	17 ^m .	+ 58 ^s .	16 ^m , 24
10	28	20	3	17	+ 59	58, 91

Dif. I 0 0 0
From 3600^h
take 102,67

Dif. I 42,67 Incr. ☉'s
Eq. additive; consequently the
Equat. of the mean to the true
must be ablative, and therefore
the true less than the mean Y^r.

As 3497,33 : 102,67" :
60,66^h : 1,78^m fere, or 1^h. 46^m. 48^s. = 43^s. Time. Which
deducted from 5^h. 48^m. 55^s. leaves 5^h. 48^m. 12^s. Afternoon,
May 30, 1755, when the ☉ is again in the same Point of the
Ecliptic, as on May 30, 1754, Noon. And consequently the
Length of the true Year is 365^d. 5^h. 48^m. 12^s. for that Interval.

To determine the same, nearly, by the Tables?

Add the Quantity of the mean Year (365^d. 5^h. 48^m. 55^s.)
to the former Time, and so on, for each Year, (See Table, Pal-
ladium 1750, p. 53.) making 5^h. 48^m. 55^s. Afternoon,
May 30, 1755, when the ☉ will be nearly in the Ecliptic,
as at first.

☉'s true Place then by Doctor Halley, was 2°. 80°. 51'.
29". 47". and ☉'s mean Anomaly 10°. 29°. 19'. 2". 40".
☉'s Place 2". 10". beyond, answerable to 52^s. Time; which
being deducted from 5^h. 48^m. 55^s. leaves 5^h. 48^m. 3^s. After.
May 30, 1755, when ☉ was in Π 8°. 51'. 27". 37". as on
May 30, 1754, Noon.

☉'s mean Anomaly was then 10°. 29°. 19'. 0". 26". De-
creased by 1'. 2". 51". Dr. Halley.

Length mean Year, 365°. 5^h. 48^m. 55^s.
Equation — 52

True Year, mean or ap. Time, 365 5 48 3

But how far Ac-
curacy can be de-
pended on by Ta-
bles, (where the
Deviation of a

Second of a Degree is 24^s. Time, or 2^h Thirds of Deg. 1^s. Time) is
doubtful.

Otherwise, — ☉'s Place at Noon.

May 30, 1754 — 1°. 80°. 51'. 27". 37" ☉'s An. 10°. 29°. 20'. 31". 17".

May 30, 1755 — 1. 8. 37. 34. 51. ☉'s An. 10. 29. 4. 42. 54.

Dif. short. of first Pl. 13. 52. 46.

Diff. An. 15. 20. 23.

The

The Diff. of Equation for $\odot$'s An. $10^s. 29^o$, and 11^s . in 1755, or Difference of a Day's Motion, is $1'. 44''$. decreasing, which taken from $59'. 8''$. a Day's mean Motion, leaves $57'. 24''$. a Day's true Motion, nearly.

Say $57'. 24'' : 24^h. : 13'. 53''$. *ferè* : $5^h. 48^m. 17^s$. to be added to 365 Days = 365 Days, $5^h. 48^m. 17^s$. for the true Year, nearly agreeing with the Equated Year by the Process.— But, if the $\odot$'s Place be found on the 31st of May, by Tables, and the Diff. taken betwixt that and the $\odot$'s Place on the 30th, for the true diurnal Motion, $57'. 25''. 44''$. the Proportion for $13'. 52''. 46'''$. will give the true Year, 365^d. $5^h. 48^m. 2^s$. (according to the Principles of the Tables), as before.

Note, The least Diff. betwixt the mean and true Year is for the Space between the Equinoxes, additive; and the greatest Diff. between the Tropics, subtractive from the mean, for the true Year.

XIII. QUESTION; usefully answered by Mr. John Boston, of Biggleswade, Bedfordshire.

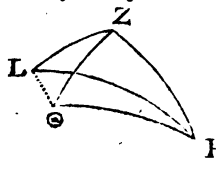
THE Observations being made some Hours distant from Noon, the following Method will give the Compt. of Lat. a small Matter too little, and the Lat. by this Method is truest found, when the Observations are made farthest from Noon; because, then the Sun's Altitude increases or decreases the faster. Whence this PRACTICAL RULE.

O P E R A T I O N.

Diff. of Obs. in Time = $30^m. = 7^o. 30'$.	
Log. S. Co. Ar. — — —	= 0.884302
Compl. of Sun's Declin. = $77^o. 24'. N$.	
Log. S. Co. Ar. — — —	= 0.010587
Diff. Altitudes, $3^o. 10'$. Log. S. — —	= 8.742259
Compl. Lat. nearly = $25^o. 42'$. Log. S. — —	= 9.637148

This Complement of Latitude being always too little, it must be supposed something more, and a Trial, or Two, by Case 1st of Spherics, will give the true Compl. of Lat. = $26^o. 0'$.; as, by the above Case, I found the Hour $\angle$ from Noon, at the first Observation = $70^o. 2'$. and at the 2^d, = $62^o. 32'$. their Diff. = $7^o. 30'$. which in Time equal 30^m . equal the given Time between the Observations, and proves the Method to be good, and the Work true. Hence, the Lat. = $64^o. 0'$. N. and Times of Observation, 7^h. 19^m. 52^s. and 7^h. 49^m. 52^s. Morning.

Answered by Mr. William Smith, of Irthlingborough.



IN the right-angled Sph. Trian. LP $\odot$ is given LP or $\odot P = 77^o. 24'. 2''$. Compt. of the $\odot$'s Declin. and $\angle LP\odot = 7^o. 30'$. Time between the Observations. Whence $L\odot = 7^o. 19'. 7''$. In oblique Spheric. Trian. Z $\odot$ L is given $Z\odot = 70^o$, $ZL = 66^o. 50'$. the Compl. of the $\odot$'s Alt. at each

each Observation, and $L\odot$ is found above; whence $\angle L\odot Z = 63^{\circ}. 51'. 59''$. whose Compl. $= \angle P\odot Z = \angle PLZ = 26^{\circ}. 54'. 1''$. In Triang. $P\odot Z$ or PLZ , two Sides, and their included $\angle$ are known; whence the Compl. $PZ = 63^{\circ}. 10'. 53''$, the Lat. and $\angle ZP\odot = 70^{\circ}. 26'. 55\frac{1}{2}'' = 7^h. 18^m. 12^s$. Time, and $\angle ZPL = 62^{\circ}. 56'. 55'' = 7^h. 48^m. 12^s$. Time, in the Forenoon, when the Observations were made. Q. E. I.

Mr. Wigglesworth, by an algebraic Process, finds the Lat. $63^{\circ}. 55'. 38''$.

Mr. Thomas Huntley's Answer.—Given, $\odot P = LP = 77^{\circ}. 24'. 2''$. Sun's Co. Decl. by Royal Ephemeris, and the included $\angle P = 7^{\circ}. 30' = \frac{1}{2}$ an Hour, to find $\odot P = 7^{\circ}. 19'. 9''$. and $\angle L\odot P = 89^{\circ}. 10'. 51''$. Then, in Triang. $\odot LP$, we have $\odot L$, as above, $\odot Z = 70^{\circ}$. and $LZ = 66^{\circ}. 50'$. to find $\angle L\odot Z = 63^{\circ}. 51'. 38''$. Lastly, in Triang. $\odot PZ$, are given $\odot P$, $\odot Z$, as before, and $\angle P\odot Z = 89^{\circ}. 10'. 51'' = 63^{\circ}. 51'. 38'' = 26^{\circ}. 51'. 13''$. to find $\angle P = 70^{\circ}. 51'. 10'' = 4^h. 40'. 20''. 40^m$. Time from Noon, and $PZ = 26^{\circ}. 4'. 17''$. Whence the Lat. is $63^{\circ}. 55'. 43''$. W. W. R.

In this Solution no Regard was had to *Refraction*, *Parallax*, or *Variation of Declination*, but, if the Declination be calculated to 7 in the Morning, and proper Allowance be made for *Refraction* and *Parallax*, the Sides $\odot P$, LP will be $77^{\circ}. 28'. 5''$. $\odot Z$, LZ , $70^{\circ}. 21'. 5''$, and $66^{\circ}. 51'. 47''$. respectively, when the Side $\odot P = 7^{\circ}. 19'. 16''$. $\angle L\odot P = 89^{\circ}. 9'. 50''$. $\angle L\odot Z = 63^{\circ}. 0'. 46''$. $\angle P\odot Z = 26^{\circ}. 9'. 4''$. $\angle P = 70^{\circ}. 3'. 51'' = 4^h. 40^m. 15^s. 24^th$. Time, $PZ = 26^{\circ}. 8'. 46''$. whence the Latitude $63^{\circ}. 51'. 14''$.

Plura fortè resolvissimè, si per negotia licuisset. Tho. Huntleius.

Chesterfieldensis makes the Latitude $63^{\circ}. 55'. 34''$. Time of the first Observation, $7^h. 19^m. 38^s. 2d, 7^h. 49^m. 38^s$.

PRIZE-QUESTION, answered by the Author, according to the short and improved Method by the Dean of Durham.

THE *operose Method*, by the *Altitude of the Nonagesimal Deg.* in finding the *Parallaetic Angle at the Moon*, (or Angle that a *Vertical* passing through the Moon's Center makes with the *Ecliptic*) her *Parallaxes*, and apparent computed Place therefrom, (See Mr. Duntborne's Method) has been the great *Obstacle to discovering the Longitude at Sea*. This Obstacle is now, in a great Measure, removed by Dean Cowper's *Short Method* of determining the *Parallaetic Angle*; which is farther facilitated, and the Trouble of a trigonometrical Operation spared, by our *Tables* (in the *Royal Diary*) of the $\odot$'s *Right Ascension* and *Declination* to each Day, at Noon; by which her *Right Ascension* and *Declination* are readily determined for any *intermediate Time*, betwixt two next Noons.

DEAN COWPER previously observes (see his *Treatise* mentioned in the Preface) That, "In the Construction of *Solar Eclipses*,

" or

" or *Occupations*, we see the Progress of the *Lunar Path* over
 " the *Earth's Disk*, the *Parallels* it approaches to, or intersects;
 " the *Points of Intersection*, and the *Distance* of any *Place* on
 " the *Globe* from those *Points*, as also the *Longitudes* and *Lat.*
 " of *Places* where the *lunar Shadow* enters, or leaves the *Earth's*
 " *Disk*. All which are determined from *geometrical Projection*.
 " In this *Projection* we have a *Scheme* of the *Earth's Aspect*,
 " in respect of the *Sun* or *Star*, for the *Time* given. And we
 " may see represented how every *Place* on the *Hemisphere*, before
 " us, describes its own *Path*, in its *Passage* over the *Disk*:
 " And, in respect of which *Path* the *Sun*, or *Star*, (on the
 " *Plane* of whose *universal Horizon*, the *Projection* is made) is
 " seen to *rise*, *culminate*, and *set*, according to the *Position* of
 " the *Place* on the given *Plane*. The *Angle* is represented, which
 " the *Poles* of the *Earth* and the *Ecliptic* make upon the *Plane*
 " of the given *Horizon*, and also that *Angle* which the *Axis* of
 " the *Ecliptic* makes with a *vertical Circle*, drawn through the
 " *Center* of a *Place*.—This *Angle* is the *Complement* of That,
 " which, in *Spherics*, is called the *Parallactic Angle*. The
 " *Sides* of the *Parallactic Triangle* are represented by *strait Lines*,
 " drawn from the *Center* of a given *Place*, on the *diurnal Path*,
 " one to the *Center* of the *Disk*, and the other to the *Axis* of
 " the *Ecliptic*, with the intercepted *Portion* of the *Ecliptic Axis*.
 " These form the *Parallaxes* in *Azimuth*, *Longitude* and *Latitude*,
 " bearing such *Proportion*, (as is well known) to the whole *Disk*,
 " as the *Parallaxes* themselves bear to the *horizontal Parallax*
 " of the *Moon*.

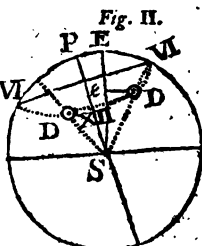
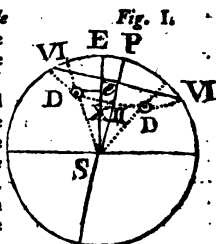
" The *Complement* of the *Parallactic Angle* sought is *Part*
 " of a plain right-angled *Triangle*, of which one *Side*, and the
 " *Right Angle* are already known; the *Angle* sought is either
 " the *Sum* or the *Difference* of those *Angles* formed by the
 " *vertical Line* of the *Place*, at the *Center* of the *Disk*, with
 " the prime *Meridian*, and that *Meridian*, or the *Pole* of the
 " *Earth*, with the *Axis* of the *Ecliptic*. The *Angle* at the *Center*
 " may be had by *Calculation*, like that by which the *parallac. $\angle$* is
 " found, when the *Alt.* and *Pl.* of 90° are given with the *D's*
 " *Distance* from it, by only taking the *Complement* of the *Moon's*
 " or *Sun's Declination* instead of their *Distance* from the *Pole*
 " of the *Ecliptic*; then adding or subtracting the *angular Distance*
 " of the *Poles*, to or from the *Angle found* (as the *Case* re-
 " quires) will give the *Complement* of the *Parallactic $\angle$* , sought.

" NOTE, If the *N. Pole* be projected on the *East Side* of
 " the *Axis* of the *Ecliptic*, and the *vertical Line*, passing through
 " the *Center* of the given *Place* be *Westward* of the prime *Me-*
 " *ridian*, then the *Complement* of the *Parallactic Angle* is the
 " *Difference* of the said *Angles*, i. e. when the *Moon* or *Star* is
 " *Eastward* of the prime *Meridian*; but when *Westward*, or
 " the *Meridian* of the *Place* lies to the *Eastward* of the prime
 " *Meridian* then the *Sum* of the said *Angles* is the *Com-*

"plement of the *Parallaëtic Angle*
 "sought. And the *contrary* is to be
 "observed when the *Projection* of the
 "Earth's *Axis* lies to the *Westward*."

"Fig. I. represents the enlightened
 "Hemisphere, with the *Axis* of the
 "Earth inclined to the *Eastward* of the
 "Axis of the *Ecliptic*. The *Curve*
 "Line passing through VI. D. XII.
 "D. VI. the *Path* of any given
 "Place on the *enlightened Disk* for the
 "Time given. DSP or PSD the an-
 "gular Distance of the Place given at
 "the Center of the *Disk* from the
 "prime Meridian. DSe and eSD the
 "Angles which are the Complement
 "of the *Parallaëtic Angle*. In the
 "first Instance, the Angle $DSe = DSP$
 "—SP. In the latter, $PSD + SP =$
 "Angle DSe.

"In Fig. II. The *Axis* of the Earth
 "is projected to the *Westward* of the
 "Ecliptic *Axis*, the *Reverse* of the for-
 "mer Instance is observed, and the An-
 "gle sought $DSe = DSP + PSe$, and the Angle $eSD = PSD -$
 "PSe.



The Reverend Author finds the Right Ascension, *Medium Cæli*, or Time from Noon in Deg. added to R. A. at Noon; the Diff. between which and R. A. η is the η 's Angular Dist. from Merid. at the Pole, which, with the Compl. of Latitude and η 's Dist. from the Pole, being given, to find the η 's Altitude? He says, by Spherics; *Rad. : Diff. bet. R. A. Med. Cæli, and R. A. η : : Cot. Lat. : Tang. 4th Arch.* — This subtracted from (or added to, when the Angle at the Pole exceeds a Quadrant) the Compl. of the η 's Declin. or Dist. from the North Pole, leaves a 5th Arch. — Then, *As Cos. 4th : Cos. 5th Arch : : S. Lat. : S. η 's Alt.* And, *As Cos. η 's Alt. : S. Diff. bet. R. A. M. C. and R. A. η : : Cos. Lat. : S, $\angle$ at the Center.* To or fr. which adding, or subtracting the $\angle$ of the Poles of the *Ecliptic* and *Earth*, on the Plane of the Hor. answering to the η 's R. A. (thus found, *Rad. : Cos. R. A. η from the next Equ. Point : : S. $23^{\circ} 29'$: S. $\angle$ Poles * of the *Ecliptic* and *Earth* on the Plane of the *Horizon*) as the Case requires; *The Compl. of the Sum or Diff. will be the Parallaëtic $\angle$ sought.* — Thus far the Dean of Durham, who illustrates the Truth of his *Short Method*, and of the above Proportions, by three Ex-
 amples;*

* Complement of this $\angle$ is the $\angle$ of the *Ecliptic* and *Meridian*; consequently its Complement taken by *Astronomical Tables*, gives the $\angle$ of the Poles of the *Earth* and *Ecliptic* on the *Horizon*, and saves the above Operation.

amples; adding, afterwards, several Corrections and Improvements of the *Lunar Theory*, which we hope to describe *hereafter*. Now, The $\mathcal{D}$'s *Parallaxes*, in general, are thus determined.

As, Rad. : to S. Horiz. Parall. from Tables :: Cos. $\mathcal{D}$'s Alt. : S. *Parallax in Alt.* And, Rad. : Tang. Par. Alt. :: Cos. *Parallaëtic* $\angle$ at $\mathcal{D}$: (made by a Vert. with the *Ecliptic*, drawn through the $\mathcal{D}$'s Center) Tang. : *Paral. in Longitude*, which added in the Oriental and subtracted in the Occidental Quadrant of the *Ecliptic*, to and from the true, gives the *apparent Longitude of the Moon*. Again, Rad. : S. $\mathcal{D}$'s *Parallax in Alt.* :: S. *Parallaëtic* $\angle$ at $\mathcal{D}$: S. *Parallax in Latitude*.

In computing the $\mathcal{D}$'s *Parallax*, by Dean *Cowper's* Method, at the Time of *Eclipses* of the *Sun*, the $\mathcal{D}$'s R. A. may be taken the same with the *Sun's*, without sensible Error.

If, instead of the *absolute* horizontal *Parallax* of the $\mathcal{D}$, you take the Excess of the $\mathcal{D}$'s horizontal *Parallax* above that of the *Sun's*, you will have the *Parallax of the Moon from the Sun in Altitude, Longitude and Latitude*.

Tables being computed, for discovering the *Altitude and Longitude* of the *Nonagesimal Degree*, at any Time, the *Parallaëtic Angle* by 90° may be thus found. — As Ra¹. : Cos. Dist. $\mathcal{D}$ from the *Nonages. Deg.* :: Tang. Alt. 90° . : Tang. 4th Arch. This taken from the Compl. $\mathcal{D}$'s Lat. or Dist. from the North Pole of the *Ecliptic*, leaves 5th Arch. — Then, Cos. 4th to Cos. 5th Arch :: Cos. Alt. 90° . : S. $\mathcal{D}$'s Alt. And, Cos. $\mathcal{D}$'s Alt. : Dist. from 90° . :: S. Alt. 90° . : Cos. *Parallaëtic Angle sought*. But this Method, and that by Mr. *Duntborne*, are exceeded by a better already shewn.

A *Solar Eclipse*, 18th Feb. 1737, was computed by the *operose* Method in *Leadbetter's Uranoscopia*, from Page 147 to 153, viz. for finding the Meridian $\angle$, culminating Point, *Nonagesimal Degree*, &c. in the $\mathcal{D}$'s Orbit; the same *Eclipse* was computed with the same *Requisites*, in the *Ecliptic*, which last came nearest Observation. — And, in the *Examples* of the Use of Dr. *Halley's* Tables (*d* and *d 2*) the *Nonagesimal Degree* and *Parallaëtic Angle at the* $\mathcal{D}$, are both taken in the *Ecliptic*; tho' the $\mathcal{D}$ had almost 5° . of Latitude.

And, since the *Ecliptic* is nearly fixed (and not varying in its Inclination to, and Interfection with the *Equinoctial*, like the *Moon's Orbit*) and is the Circle wherein the *Sun* constantly appears, and likewise That, in or from which the *Longitude* and *Latitude* of all fixed Stars are computed; therefore, 'tis evident, the *Nonagesimal Degree*, and *Parallaëtic* $\angle$ at the $\mathcal{D}$, should be computed in, or have Reference to, the *Ecliptic*, as the proper Standard for determining the $\mathcal{D}$'s *visible Longitude and Latitude*. The other Method, by the $\mathcal{D}$'s Orbit, (ever varying its Position) should be rejected, as both tedious and inaccurate.

For applying the *Parallaxes* to the computed Places of the *Moon*. — 1. When the $\mathcal{D}$ is to the East of the 00° . of the *Ecliptic*, the *Parallax in Longitude* must be added to the true *Longitude*; but
when

when she is to the Westward thereof, it must be *subtracted* for the apparent Longitude.

2. The like Rule holds good for *Right Ascensions*, according as the Moon is to the East or West of the Meridian of the Place of Observation.

3. The *Parallax in Latitude* added to the true Distance of the ☾ from that Pole of the Ecliptic, which is nearest to the Vertex of the Place of Observation, will give her apparent Distance from the Pole; whence it will appear, whether it is to be *added to*, or *subtracted from* the true Latitude for the apparent. But, between the *Tropics*, where the Ecliptic is vertical once in 24 Hours, at such Times it is always to be *added to* the true Latitude.

4. In like Manner, the *Parallax in Declination* added to the true Distance of the ☾ from that Pole of the Equator, nearest to the Vertex of the Place of Observation, will give her apparent Distance from that Pole; whence it will appear whether it is to be *added to*, or *subtracted from* the true Declination. But, in Places on the Globe which have no Latitude, the *Parallax in Declination* is always additive. The Navigator, being Master of applying the ☾'s Parallaxes, the Longitude betwixt Places is determined, by observing the Appulses of the Moon to a fixed Star, or her Distance from a fixed Star, lying near the Parallel of Latitude, where the Moon then is, (to avoid Error in the ☾'s computed Dist. from the * resulting from computed Error of her Lat.) or else by the Dist. of the ☾ from the Sun in her first or last Quarter.

From any of these Observations, the Latitude of the Place, and Time of Observation being known, the Distance of the Meridian from that of *Greenwich* is discovered, by finding the Time at *Greenwich*, from astronomical Tables, when such Phenomena could happen: The Difference of which Times, turned into Degrees, will shew the Distance of those Meridians from each other.

METHOD. Assume a Time at *Greenwich*, when a Phenomenon is observed under a distant Meridian, and compute from that assumed Time, the apparent Place of the Moon, and compare the Result under the distant Meridian, with Observation, noting the Error. Assume a new Time at *Greenwich* Meridian, and repeat the Operation, and compare the Result with Observation, and by proportioning the Errors, the computed Result will correspond with Observation, under the distant Meridian; then the difference of those Times converted into Degrees will be THE DIFFERENCE OF LONGITUDE BY OBSERVATION.

The Distance of two Meridians may be known within 3 or 4 Degrees of Truth from a Ship's Journal, by which the Time at *Greenwich* may be assumed, for the first Computation. And having found the R. Ascension and Declination of the ☾ corrected to the Time assumed (from our Royal Diary) find the ☾'s Azimuth and true Distance from the Vertex; and to the latter add the Difference between the ☾'s Parallax in Altitude, and the Refraction, which will give her visible Distance from the Vertex. Find, also, the Stars

Stars Azimuth to the same Time, and its Distance from the Vertex, from which subtract the Refraction.

Then there will be given two Sides of a Spherical Triangle, which are the visible Distances of the γ and $\star$ from the Vertex, with the Angle betwixt them, or azimuthal Distance of the γ 's Center from the Star, to find the third Side, which is the visible Distance of the γ 's Center from the $\star$: And this Side diminished, or increased, by the γ 's apparent Semi-Diameter, according as the nearer, or more remote Limb of the γ to the $\star$, was observed, will be equal to the observed Distance of the γ 's Limb from the $\star$, in Case the Time at Greenwich was rightly assumed; if not, correct the Time by Quicks, and repeat the Computation, and by comparing the raw Errors the Time at Greenwich may be had to a sufficient Exactness; from whence the DEGREES BETWEEN THE TWO MERIDIANS WILL BE KNOWN.

N. B. The Difference between the $\odot$'s Right Ascension and mean Longitude is, at once, the absolute Equation of Time: Being the same as the Sum, or Diff. of Equation by the $\odot$'s mean Anomaly, and that by the $\odot$'s Place.

EXAMPLE I. From Dr. Halley.

In the Year 1725, December 10, 11^h. 14^m. apparent Time, (which is 11^h. 13^m. mean Time) at a Place to the West of Greenwich, in Lat. 40°. N. the Star γ Leonis was observed 20°. 30'. distant from the nearer Limb of the γ : Required the Distance of the Place of Observation from the Meridian of Greenwich.

Assume 13^h. 21^m. for the mean Time at Greenwich when the Observation was made.

The γ 's R. A. at that Time corrected; (but for a present Year's Observat. is found by our Royal Diary, 1756.) 127°. 42'. 28".

Her corrected Distance from N. Pole, (from her corrected Declination.) — — — 65 52 0

The R. A. of the $\odot$ 270°. 31'. 8". }
Merid. of Obser. } 11^h. 13' = 168°. 15'. 00". } 78 46 8

γ 's Horiz. Parallax (from γ 's m. Anom. & Tabl. 1 0 8

γ 's Azimuth. — — — 84 0 10

Her Dist. from the Vertex 43 47 7

True Parallax in Altitude + 42 16

The Refraction — 0 53

γ 's vis. Dist. from the Vertex — — — 44 28 30

Her apparent Sem. Diam. — — — 0 16 47

The Long. of the Star γ Leonis Ω 25 45 0

Its Latitude N. — — — 3 47 27

The Star's R. A. — — — 151 11 32

Its Dist. from the N. Pole — — — 68 47 21

Its Azimuth — — — 96 10 40

The Star's true Dist. from the Vert. 63 22 13

The Refraction — — — 1 46

The Star's appa. Dist. from the Vertex — — — 63 20 27

The Azimuthal $\angle$ bet. the $\star$ and γ 's Center 22 10 30

The

The vis. Dist. of the J 's Center from $\star$	21	13	13
Sub. the J 's apparent Sem. Diam.	—	0	16 47
Remains the vis. Dist. of J 's Limb from $\star$	20	56	26

Exceeding the observed Dist. by $6'. 26''$. therefore the Time assumed must be corrected.

Add 15^m . to the assumed Time, (because the J was moving towards the $\star$) and the correct R. A. and Declination of the J (as from our *Royal Diary*) being found, and the visible Distance of the J and $\star$ from the Vertex, with the comprehended Angle between them, the Distance of the J 's Limb from the $\star$ will be $20^\circ. 47'. 17''$. being deficient of the Distance observed by $2'. 43''$. Therefore the J 's Limb approaches the Star by an Arc of $9'. 9''$. in 15^m . of Time. Say $9'. 9'' : 6'. 26'' :: 15^m. : 10^m. 33^s$. which added to $13^h. 21^m. = 13^h. 31^m. 38^s$. the Time at *Greenwich*; and therefore the Distance of Meridians $= 34^\circ. 38'. 15''$.

In this *Example*, the Difference between the Distances of the J and $\star$ from the Vertex is so great, that the Difference of Refraction is very great, and therefore the visible Distance of the J from the Star could not be accurately determined without finding both these Distances from the Vertex. But where the Altitudes of the J and $\star$ are not very unequal, the Refraction may be allowed for, at once, in the observed Distances, by adding as many Seconds thereto, as that consists of Degrees.

EXAMPLE II. from Dr. Halley.

In the Year 1725, Dec. 10th. $12^h. 50^m$. mean Time, at a Place to the West of *Greenwich*, in Lat. $48^\circ. N$. the Star β . Tauri was observed $47^\circ. 57'. 12''$. Distant from the farther Limb of the J , required the Distance of the Meridian of Observation from that of *Greenwich*?

To correct the observed Arc, for the Refractions, add $48''$. thereto, and it will $= 47^\circ. 58''$. Assume $56''$. for the Distance of the Meridian of Observation from *Greenwich*, which will give $16^h. 34^m$. for the Time to be assumed?

Whence, by working as before, from the Hor. Par. the corrected R. A. and Declination of the J , the visible Distances from the Vertex of the J and $\star$, and Azimuth Dist. their visible Distance will come out

To which add apparent Sem. Diam. J	47°	34'	25''
It will give the app. Dist. of the farther Limb of the J from $\star$	0	16	48
The observed Dist. corrected of Refraction was	47	51	13
	47	58	0

Their Difference — — — — — 0 6 47

Add 15^m . to the assumed Time, for Correction, and it will give $16^h. 49^m$. and repeating the Computation and Solution of the Spherical Triang. will give $47^\circ. 43'. 51''$. for apparent Dist. of the J 's Center from the $\star$, which increased by the apparent Sem. Diam. J , as before, becomes $48^\circ. 9'. 39''$. exceeding the observed Dist. of the J 's Limb from the $\star$ by $2'. 39''$. This Error

Error added to the former $6^{\circ}.47''$. will be $9^{\circ}.26''$. for the η 's apparent Motion from the $\star$ in 15^m . Therefore, $9^{\circ}.26''$. : $6^{\circ}.47''$. :: 15^m . : $10^m.42^s$. which added to $16h.34^m$. the Time first assumed, it will give $16h.44^m.42^s$. for the Time at *Greenwich* when the Observation was made. — The Difference of which Times $8^h.54^m.42^s$. answers to $58^{\circ}.49'.39''$. the Distance of the two Meridians required.

By alike Method of Computation the Difference between any Meridian and that of *Greenwich* may be found from Observation of the Moon's Distance from the Sun, in her first or last Quarter. And the Work will be something more simple, as the Sun has no Latitude. But here the computed Distance must be corrected by the Sem. Diam. of the Sun, as well as by that of the Moon. The Sun's apparent Diameter is found in the Tables answering to his mean Anomaly.

The same may be done by an Occultation of a fixed Star by the Moon, which not frequently happening, at Sea, is not so fit for the Purpose of Longitude, as the observed Distance of a fixed $\star$ from the η , taken about the same Parallel of Declination.

Thus are *Astronomical Tables*, and a correct *Lunar Theory*, advantageously applied in the important Discovery of the Longitude.

Likewise, the Difference of Times of the *Emersons*, or *Immersions* of *Jupiter's first Satellite*, computed for *Greenwich Observatory*, throughout the Year 1756, in our *Royal Diary*, and the Times of any of those Eclipses, as observed (with a Foot Reflector or 6 Foot refracting Telescope) under any other Meridian, being converted into Degrees, Minutes and Seconds of a Degree, will shew the Difference of Longitude between *Greenwich*, and the Place of Observation.

To find the LONGITUDE at Sea, by our ROYAL DIARY, and the Moon's Southing observed.

LET the exact Time of the η 's Southing be taken at Sea, and the Time of her Southing, from our Tables, for the same Day, and the Day following, if the Ship be to the Westward of the first Meridian, but for the Day preceding, if she be to the Eastward.

Then say, As Diff. in Time of η 's Southing on these Days : 360° . :: Diff. in Time between her observed Southing, and her Southing that Day at London : Difference of Longitude required.

PARADOXES, answered in last Year's PALLADIUM.

I. PARADOX. A Lady brought to Bed of an Heir.

II. PARADOX. A Brother and Sister's Name, *Harlot*, lawfully married.

ANSWERS to QUESTIONS in the LADIES DIARY, 1755.

QUESTIONS *Ephemeridis prima sic responditur.*

Phœbus iter fecit per signa volubilis anni

Bis novies, ex quo nata Maria fuit.

IN ENGLISH.

Tell *Miss*, that since her Birth, the rolling *Sun*
Has eighteen Circuits thro' the *Ecliptic* run.

The same answered by Mr. William Smith, of Irthlingborough, near Higham-Ferris, Northamptonshire.

THE *Sum* of the Age and 56 is as much above 58, as twice the Age is above 20. Putting x for the Age, then $x + 56 = 58 = 2x - 20$. Consequently $x = 20 - 2 = 18$ Years. The same was answered by Mr. Brown, Mr. Croft, Mr. Leighton, and many others.

Secundi QUESTIONIS Resolutio, a Dom. Huntleio.

Ponamus $2x$ pro turris altitudine, tum hæ nascuntur propor-

tiones, ut $16\frac{1}{2} : 1'' \times 1'' :: 2x : \frac{2x}{16\frac{1}{2}} =$ tempori quadrato,

quo globulus à summo arcis ad imum decidet, utque $16\frac{1}{2} : 1'' \times$

$1'' :: x : \frac{x}{16\frac{1}{2}} =$ tempori quadrato, quo dimidium altitudinis

descendente percurrit: sed ex conditione problematis $\sqrt{\frac{2x}{16\frac{1}{2}}}$

$= \sqrt{\frac{x}{16\frac{1}{2}}} = 1''$, et reducendo $x = \frac{16\frac{1}{2}}{3 - 2\sqrt{2}}$, quæritur-

ris est 187,48116 pedes alta, & tempus quo descenditur, = $\frac{1}{300}$ m.
3,414214. Q. E. I.

Mr. William Smith, a Young Gentleman of Genius at Irthlingborough, answers it thus.

LET $x =$ Time of Descent from the Top of the Tower to Bottom, and we have $2x^2 = x^2 - 2x + 1$, whence $x = 3,4142$, and (if a heavy Body falls $16\frac{1}{2}$ Feet the first Second, and as the Squares of the Seconds continually) $3,4142^2 \times 16\frac{1}{2} = 187,4795$ Feet, the Tower's Height. The same was answered by several others.

III. DIARY QUESTION, answered by the same Young Gentleman.

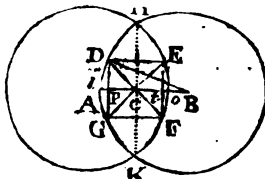
PUT $ax = a$, then $x^4 + x^3 + x^2 = 546560 = a$, and $x^4 + x^3 + x^2 = 1086992 = b$, per Quest. Hence by exterminating $x^4 + x^3 + x^2$ $- 6x + a = 0$, whence $x = 2,2857243$ fere. By first $x = \frac{a}{x^3 + 1} = 14$, the Daughter's Age, and $x^2 = 32$, the Age of the Wife required.

The

The same was answered by Mr. Brown, Mr. Gilford, and several others.

Quarta QUESTIONIS Resolutio, a Dom. Hundoio.

Constructio.—Fiat $AB = 30$, a punctis A, B, radio $= 25$, describe circulos duos, et per puncta H, K, ducatur recta HGK; dein sint Anguli ACD, BCE, uterque $= 45^\circ$, et ductis DCE, ECG, junguntur lineis puncta D, E, F, G, quod figuram quadratam formabit.



Computatio. In Triangulo BGD, dantur $BC = 15$, $BD = 25$, and $\angle BCD = 135^\circ$ ad inveniendum $\angle CBD = 19^\circ. 53'.$ $45'' \frac{1}{2}$. denique in trigono BDP retè angulato, data sunt $BD = 25$ et $\angle DBP = 19^\circ. 53'.$ $45'' \frac{1}{2}$, unde investigatur $DP = 8.507806$. adeoque latus quadræ circulis inclusæ 17.015612 adæquat. Q.E.I.

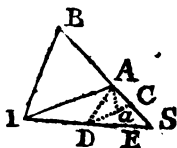
The same answered by Mr. William Smith, of Irthlingborough.

GIVEN $A = B$, Rad. of each Circle $= 25$, and $AB = 30$, then $20 = 2x$; $d = 50$ Diameter of each Circle, and $x = P$, then, $2c - 2x = Pt = DE = DG$, the Side of the Square. And, by common Properties, $d - x \times x = c - x^2$, whence (putting — $2b = -\frac{1}{2}d - c$) $x = b \mp \sqrt{b^2 - \frac{c^2}{2}}$ 1.49219 ; consequently, $2c - 2x = 17.015612$, the Side $\square$ required.

The same was also answered by Mr. Brown, and several others.

V. DIARY QUESTION, answered by Mr. William Smith, of Irthlingborough.

Constructio.—Make $\angle AIS =$ two Points, or $22^\circ. \frac{1}{2}$, the $\angle BIA = 4$ Points, or 45° . Draw the horizontal Line IS, at the Interval IS, draw SB, so that SA and AB, may be in the given Ratio, of 2 to 3. Now, I represents the Island, and S, A, B, the Ship at 1st, 2d, and 3d Observations, and $\angle BIS$, the required

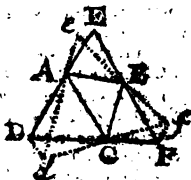


Course—*Geometrical Solution.* From A draw AD so, that SD may be to DI, as AS is to AB; then, $DS : AS :: DI : AB :: DI + DS (= IS) : SA + AB (= SB)$ alternately compounded. Therefore $\angle DAS = \angle IBS$, and $\angle SIB = \angle SDA (= 67^\circ. 30')$ per 4. 5. 6. 7. E. 6. Consequently, AD is $\parallel$ to IB, and $\angle IAD = \angle BIA (= 22^\circ. \frac{1}{2})$ make $\angle DAE = \angle AIB (= 45^\circ)$. Then, $\angle DEA$ is the Complement, $\angle AIE (= 67^\circ. \frac{1}{2}) = ADE$. Therefore, $AD = AE$ (6. c. 1.)—Draw DC $\parallel$ IA, then $\angle CDS = \angle$

$\angle AFS = 21^\circ. 30'$; and $\angle ABC \triangleq DAI \triangleq DAE \triangleq 45^\circ$; because it bisects $\angle IAE$. Therefore $Ds = Aa$, and DC is at $\perp AE$; Therefore $\angle DEa = \angle ACa$, (S. e. r.) $67^\circ. \frac{1}{2}$. Consequently, $\angle EDa = \angle CAa = 22^\circ. \frac{1}{2}$, and $\angle ISS = 45^\circ$. Or N. E. the Course, required. — Mr. *Randall* makes the Course $47^\circ. 24'. 46''$. from the West northerly.

VI. DIARY QUESTION, 396, answered by Mr. William Smith.

IT is evident that one Side of the required Δ must be $\parallel$ to the greatest Side of the given Δ ; for, if another equilat. Δ *def* be circumscribed about the given Δ , near to the required Δ DEF, join the Points *Dd*, and *Ff*, then $\angle DCG = \angle FCF$, and $\angle FCG = \angle DCG + \angle CDG = \angle CFF + \angle CFF$. But $\angle DCG$ is more obtuse than $\angle CFF$, at Sight; consequently, $\angle CDG$ is greater than $\angle CFF$; therefore DC and CF is greater, in Proportion, than CG and CF . Consequently, Δ DEF is greater than Δ *def*. By plain Trigonometry $\angle ACB$ is found $\triangleq 38^\circ. 37'. 30''$; then, S. $\angle F : BC :: S. \angle CBF (\triangleq \angle ACB \text{ 29. e. r.}) : CF \triangleq 8, 64945$, to which, $+ BC = AC$, gives $DF \triangleq 24, 64945$. Whence the Area $\triangleq 26 \text{ A. 1 R. 9, 544 P.}$



VIII. DIARY QUESTION, answered by Mr. William Smith, of Irthlingborough.

LET M, D, T, represent *Mosbury*, *Darmonth*, and *Toness*; A and B, the two Places enquired of the Road. Put $\frac{1}{2} \triangleq \frac{1}{3}$ to 1 $\triangleq$ Ratio of MA : BD, $c = AB = 7$, and $x = MD = TB$ $\triangleq$ Distance passed over in 110 Minutes. Then, $AT = ac = 2MA$, per Question. Whence $AC \triangleq \frac{a^2 + c^2 - x^2}{2c}$, and $BC \triangleq \frac{c^2 + x^2 - a^2}{2c}$. Put $\frac{1}{2} \triangleq \frac{1}{3}$



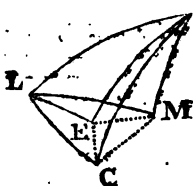
b , then $\sqrt{x^2 - \frac{1}{2}c^2 + bcx^2 - b^2x^2}$; now, by similar Δ s, $MC : TC :: TC : CD$. Extremes and Means being multiplied, we have, by Reduction, $2bax^3 - 2bx^3 + 4bcx^2 + 4x^2 - ax^2 - cx - ac^2 \triangleq 0$; which, being put into Numbers, and solved $x \triangleq 7, 523465$; whence, $MD = 15, 2813115$ Miles; $DT = 9, 15249$; $TM = 12, 2365222$, and $4, 1064354$ Miles, the Rate travelled in an Hour.

The same was answered by several others.

IX. DIARY QUESTION, answered by Mr. W. Smith.

LET L, C, M, P, and E, represent *London*, *Constantinople*, *Bagdad*, the *North Pole*, and Place equidistant from the former three.

thence. Then, in the Sph. Triang. LPC is given, $LP = 38^{\circ}$, $30'$, $CP = 48^{\circ}$, $30'$, Compl. Lat. of London and Constantinople, and $\angle CPL = 29^{\circ}$, $15'$, their Difference Longit. Whence $\angle CLP = 100^{\circ}$, $7'$, $30''$, and $CL = 22^{\circ}$, $16'$, $38''$. In Triang. LPM, is given $MP = 34^{\circ}$, $15'$, Compl. Lat. of Mos. PL, as before, and $\angle LPM = 38^{\circ}$, their Difference Longitude. Whence $\angle MLP = 64^{\circ}$, $22'$, $11''$, and $LM = 22^{\circ}$, $38'$, $4''$. In Triang. CLM, CL , LM , and $\angle CLM$, are known, whence $\angle LCM = 72^{\circ}$, $13'$, $40''$, $\angle CML = 60^{\circ}$, $43'$, $19''$, and $CM = 15^{\circ}$, $21'$, $1''$. Now, $\angle LMC - \angle CLM = \angle ECM - \angle ECL = 28^{\circ}$, $48'$, by Quest. and $\angle ECM + \angle ECL = \angle LCM$ by Fig. Therefore, $\angle ECM = \angle EMC = 50^{\circ}$, $31'$, $50''$; consequently, in the Isosceles Triangles, ECM , BCI , and ELM , the equilateral $\angle$ s and their adjacent Sides are known; whence, $EL = 10^{\circ}$, $18'$, $6''$. In Triang. ELP, EL , LP , and $\angle$ included are known, whence Compl. of $EP = 31^{\circ}$, $18'$, $6''$, and $\angle EPL = 10^{\circ}$, $14'$, $3''$, the Latitude and Longitude, (when the grand Meridian is fixed at London) required, answering nearly to *Lancie*, or *Concor*, to Poland.



The same was answered by some others, Mr. Arne, Mr. Elph, Mr. Brown, &c.

X. DIARY QUESTION, answered by the same Mr. Smith.

PUT $p = 1000l$. $s = 1030$, the Sum of all the Payments, and $r =$ Rate of Interest; then

$$\frac{180 \times 3 + 154 \times 2 + 140 \times 1 + 100 \times 2 + 90 \times 1 + 120 \times 1 + 150 \times 2}{p} = 2,835 \text{ Months, the}$$

Time s might have been paid at the same Rate of Interest. But if 13 Months be reckoned to the Year, then 2,0777 Months, is the equated Time, which put $= t$, then $r = \frac{s - p}{pt}$, at Sim. Int.

But $r = \left(\frac{s}{p} \right)^{\frac{1}{t}}$ at compound Interest, whence,

If 13	} Mo. be reckoned to the Year, the required Rate	18l.	14s.	3d.	few	} $\left\{ \begin{array}{l} \text{per Cl.} \\ \text{per An.} \end{array} \right\}$	} at Simp. at Comp.	} Int.
12		19	12	3	1/2			
11		20	6	3	1/2			
10		21	6	6	1/2			

Mr.

Soon will be Published,

AN HISTORICAL ACCOUNT of the Travels of King SOLOMON, and the Queen of SHEBA, round the great City of BABYLON, attended by Five Ladies of Honour: Giving an Account of their every Day's Progress. How the Queen leaves Solomon, and meets him again once a Month, when she wears new Robes, embroidered with Silver; which, in a few Days, give a beautiful Light to Babylon. Also an Account of one or two Maids of Honour attending her in their Turn. With an Explanation of their close Union, in the Year 1736, and of a great Comet in the Year 1738, as will be seen from the Great City: Which Account shews the Babylonians, when the KING or QUEEN gets up, and goes to Bed, or disappears, each Day, for 12 Months together; exhibiting the several Affairs, annually, relating to the Citizens, and the great City.

To which is added,

An Explanation of the most amazing Hieroglyphics, remarkable Occurrences, strange Observations, and most unaccountable Prognostications, delivered from the BABYLONIAN OBSERVATORY, relating to the Persian Empire: With some Account of Madinet, who married the Merchant's Widow, with whom he served as an Apprentice. By CALIB'DAL HEEM, of Grand Cairo.

NOTE, This most stupendous Relation was taken by a Pilgrim, being found hid in the Wall of the largest Egyptian Pyramid, and transmitted to the Author of the Palladium, at his Castle, by the Muffi, and has been lately translated by a Turk in this Kingdom.

Particularly necessary, at this Time, for all COMMANDERS and MASTERS of SHIPS going out of, and, coming into, the British Channel.

Is Published,

A NATURAL and HISTORICAL ACCOUNT of the ISLANDS of SCILLY. Describing their Situation, Number, Extent, Soil, Culture, Produce, Rarities, Towns, Fortifications, Trade, Manufacture, and Inhabitants. — Their Government, Laws, Customs, Grants, Records, and Antiquities. — The Importance of those Islands to the British Trade and Navigation. — The Improvements they are capable of. — And Directions for all Ships to avoid the Danger of their Rocks. — Illustrated with a New and CORRECT DRAUGHT of those ISLES, from an Actual Survey, including the neighbouring Seas and Sea-Coasts, next the Land's-End of Cornwall.

To which is added,

The Tradition of the Land, called Lionez, devoured by the Sea, formerly joining those Isles and Cornwall. — Of the Cause, Rise, and Disappearance of some Islands. — And, lastly, a General Account of Cornwall. — Hesperidum Pretiosa Gens. By R. Heath, an Officer of his Majesty's Forces, some time in Garrison at Scilly. Sold by R. Mauby, in the Old-Bailey, London. Price 6s. bound.

PERPETUAL DIARY continued. By the AUTHOR.

I. A TABLE, shewing the MOVEABLE FEASTS, by the DOMINICAL LETTER and GOLDEN NUMBER, from 1700 to 1899, according to the Gregorian, or New Style, and may be continued for ever.

D. L.	GOLDEN NUMBERS.	From Xmas to Sh. Sund.	Shrove. Sund.	Easter Sunday	Reg. Sund.	Asc. Day	Whit. Sund.	Trin. Sund.	Adv. Sund.
A	3.11.14	6w 0d	Feb. 5	Mar. 26	Ap. 30	May 4	Ma. 14	Ma. 21	Dec. 3
	5.8.13.16.19	7	12	Ap. 2	May 7	11	21	28	3
	2.7.10.18	8	19	9	14	18	28	Jun. 4	3
	1.4.9.12.15	9	28	16	21	25	Jun. 4	11	3
	7.17	10	Mar. 5	23	28	Jun. 1	11	18	3
B	3.11.14.19	6 1	Feb. 6	Mar. 27	May 1	May 5	Ma. 15	Ma. 22	No. 27
	2.5.8.13.16	7 1	13	Apr. 3	8	12	22	29	27
	7.10.15.18	8 1	20	10	15	19	29	Jun. 5	27
	1.4.9.12	9 1	26	17	22	26	Jun. 5	12	27
	6.17	10 1	Mar. 6	24	29	Jun. 2	12	19	27
C	3.8.11.14.19	6 2	Feb. 7	Mar. 28	May 2	May 6	Ma. 16	Ma. 23	28
	2.5.13.16	7 2	14	Apr. 4	9	13	23	30	28
	4.7.10.15.18	8 2	21	11	16	20	30	Jun. 6	28
	1.9.12.17	9 2	28	18	23	27	Jun. 6	13	28
	6.	10 2	Mar. 7	25	30	Jun. 3	13	20	28
D	14.	5 3	Feb. 1	Mar. 22	Ap. 26	Ap. 30	Ma. 10	Ma. 17	29
	3.8.11.19	6 3	8	29	May 3	May 7	17	24	29
	2.5.10.13.16	7 3	15	Apr. 5	10	14	24	31	29
	4.7.15.18	8 3	22	12	17	21	31	Jun. 7	29
	1.6.9.12.17	9 3	Mar. 1	19	24	28	Jun. 7	14	29
E	3.14.	5 4	Feb. 2	Mar. 23	Ap. 27	1	Ma. 11	Ma. 18	30
	8.11.16.19	6 4	9	30	May 4	8	18	25	30
	2.5.10.13	7 4	16	Apr. 6	11	15	25	Jun. 1	30
	4.7.12.15.18	8 4	23	13	18	22	Jun. 1	8	30
	1.6.9.17.	9 4	Mar. 2	20	25	29	8	15	30
F	3.14.	5 5	Feb. 3	Mar. 24	Ap. 28	2	Ma. 12	Ma. 19	Dec. 1
	5.8.11.16.19	6 5	10	31	May 5	9	19	26	1
	2.10.13.18	7 5	17	Apr. 7	12	16	26	Jun. 2	1
	1.4.7.12.15	8 5	24	14	19	23	Jun. 2	9	1
	6.9.17.	9 5	Mar. 3	21	26	30	9	16	1
G	3.11.14	5 6	Feb. 4	Mar. 25	Ap. 29	3	Ma. 13	Ma. 20	2
	5.8.16.19	6 6	11	Apr. 1	May 6	10	20	27	2
	2.7.10.13.18	7 6	18	8	13	17	27	Jun. 3	2
	1.4.12.15	8 6	25	15	20	24	Jun. 3	10	2
	6.9.17	9 6	Mar. 4	22	27	31	10	17	2

EXAMPLE. What Time do the Moveable Feasts fall in 1756? The Dominical Letter being C, and Golden Number 9, Shrove Sunday is on Feb. 28; Easter, April 18; Rogation, May 23; Ascension Day, May 27; Whit-Sunday, June 6; Trinity Sunday, June 13; Advent Sunday, November 28; and so for other Years; observing the last Dom. L. for Leap Years.

Note. The above Table will also serve from 1900 to 2199, and beyond, except when the Easter Moon falls on a Sunday; then Easter falls a Week after the Time by the Tables; and consequently the depending Feasts a Week later.

II. A TABLE, shewing the *Moveable Terms* from 1700 to 1899, N. S. and may be continued for ever.

D. L.	GOLDEN NUMBERS.	Easter Term begins	Ends.	Trinity Term begins.	End.
A	3.11.14	Ap. 12	May 8	May 26	Jun. 14
	5.8.13.16.19	19	15	Jun. 2	21
	2.7.10.18.	26	22	9	28
	1.4.9.12.15	May 3	29	16	July 5
	6.17	10	Jun. 5	23	12
B	3.11.14.19	Ap. 13	May 9	May 27	Jun. 15
	2.5.8.13.16	20	16	Jun. 3	22
	7.10.15.18	27	23	10	29
	1.4.9.12	May 4	30	17	July 6
	6.17	11	Jun. 6	24	13
C	3.8.11.14.19	Ap. 14	May 10	May 28	Jun. 16
	2.5.13.16	21	17	Jun. 4	23
	4.7.10.15.18	28	24	11	30
	1.9.12.17	May 5	31	18	July 7
	6.	12	Jun. 7	25	14
D	14.	Ap. 8	May 4	May 22	Jun. 10
	3.8.11.19	15	11	29	17
	2.5.10.13.16	22	18	Jun. 5	24
	4.7.15.18	29	25	12	July 1
	1.6.9.12.17	May 6	Jun. 1	19	8
E	3.14	Ap. 9	May 5	May 23	Jun. 11
	8.11.16.19	16	12	30	18
	2.5.10.13	23	19	Jun. 6	25
	4.7.12.15.18	30	26	13	July 2
	1.6.9.17	May 7	Jun. 2	20	9
F	3.14	Ap. 10	May 6	May 24	Jun. 12
	5.8.11.16.19	17	13	31	19
	2.10.13.18	24	20	Jun. 7	26
	1.4.7.12.15	May 1	27	14	July 3
	6.9.17	8	Jun. 3	21	10
G	3.11.14	Ap. 11	May 7	May 25	Jun. 13
	5.8.16.19	18	14	Jun. 1	20
	2.7.10.13.18	25	21	8	27
	1.4.12.15	May 2	28	15	July 4
	6.9.17	9	Jun. 4	22	11

In 1756, *Easter Term* begins *May* 5th, ends *May* 31. *Trinity Term* begins *June* 18, ends *July* 7.

Note, Easter Term begins 17 Days, and ends 43 Days after *Easter*. *Trinity Term* begins 5 Days, and ends 24 Days after *Trinity*. Therefore *Easter Term* continues 27, and *Trinity* 20 Days, inclusive.

III. A Table of the Number of Days, that the *New, Quarter, or Full Moons*, in the *Greg. Account*, go forward in the Month-days of the Year, or the *Lunar Cycle*, (of 19 Yrs, or 235 Synodical Months) advances in certain Periods, from the Beginning of 1600.

Bis- sext. Yrs.	Greg. Lu. Cy. Yrs go forw of Ch Days.	Greg. L. C. Yrs go of Ch &c.
B	1600	0
	1700	1
	1800	1
	1900	2
B	2000	2
	2100	2
	2200	3
	2300	4
B	2400	3
	2500	4
	2600	5
	2700	5
B	2800	5
	2900	6
	3000	6
	3100	7
B	3200	7
	3300	7
	3400	8
	3500	9
B	3600	8
	3700	9
	3800	10
	3900	10
B	4000	10
	4100	11
	4200	12
	4300	12
B	4400	12
	4500	13
	4600	13
	4700	14
B	4800	14
	4900	14
	5000	15
	5100	16
B	5200	15

See the Reason in *Lalia Philof.* No. III. last Page.

IV. A TABLE, to find the Time of the *Paschal* or *Easter* Full Moon, and consequently *Easter*, for ever, by the Golden Numbers, and Days the *Luna* Cycle (of 19 Years) goes forward in any given Period. See Table III.

Paschal Dom		GOLDEN NUMBERS.																		
Full Days	Let.	i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv	xvi	xvii	xviii	xi
Mar. 21	C	8	19	0	11	22	3	14	25	6	17	28	9	20	1	12	23	4	15	2
22	D	9	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	2
23	E	10	21	2	13	24	5	16	27	8	19	0	11	22	3	14	25	6	17	2
24	F	11	22	3	14	25	6	17	28	0	20	1	12	23	4	15	26	7	18	2
25	G	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	
26	A	13	24	5	16	27	8	19	0	11	22	3	14	25	6	17	28	9	20	
27	B	14	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	21	
28	C	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	0	11	22	
29	D	16	27	8	19	0	11	22	3	14	25	6	17	28	9	20	1	12	23	
30	E	17	28	0	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	
31	F	18	29	10	21	2	13	24	5	16	27	8	19	0	11	22	3	14	25	
Ap. 1	G	19	0	11	22	3	14	25	6	17	28	9	20	1	12	23	4	15	26	
2	A	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	
3	B	21	2	13	24	5	16	27	8	19	0	11	22	3	14	25	6	17	28	
4	C	22	3	14	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	I
5	D	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	0	I
6	E	24	5	16	27	8	19	0	11	22	3	14	25	6	17	28	9	20	1	I
7	F	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	21	2	I
8	G	26	7	18	29	10	21	2	13	24	5	16	27	8	19	0	11	22	3	I
9	A	27	8	19	0	11	22	3	14	25	6	17	28	9	20	1	12	23	4	I
10	B	28	9	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	I
11	C	29	10	21	2	13	24	5	16	27	8	19	0	11	22	3	14	25	6	I
12	D	0	11	22	3	14	25	6	17	28	9	20	1	12	23	4	15	26	7	I
13	E	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	I
14	F	2	13	24	5	16	27	8	19	0	11	22	3	14	25	6	17	28	9	2
15	G	3	14	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	2
16	A	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	0	11	2
17	B	5	16	27	8	19	0	11	22	3	14	25	6	17	28	9	20	1	12	2
17	B	5	16	27	8	19	0	11	22	3	14	25	6	17	28	9	20	1	12	2
18	C	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	21	2	13	2
18	C	7	18	29	10	21	2	13	24	5	16	27	8	19	0	11	22	3	14	2

EXAMPLE. To find the Full Moon before Easter Sunday, in the Year 1756 ?
 Against the Period 1700, in the TABLE preceding stands I, and the Golden Number for 1756 being 9, against 1, the Days gone forward in that Period under the Golden Number ix, in this Table, stands April 15, in the first Column for Answer. And the Dominical Letter for 1756 being C, reckon on from April 15 to C, April 18 is Easter-Sunday, and so for other Cases.

NOTE, The Days the Cycle is gone forward, standing under the given Golden Number, and against a certain Month-day, serve for a given Period according to TABLE preceding.

II. A TABLE, shewing the *Moveable Terms* from 1700 to 1899, N. S. and may be continued for ever.

D. L.	GOLDEN NUMBERS.	Easter Term begins	Ends.	Trinity Term begins.	End.
A	3.11.14	Ap.12	May 8	May 26	Jun. 14
	5.8.13.16.19	19	15	Jun. 2	21
	2.7.10.18.	26	22	9	28
	1.4.9.12.15	May 3	29	16	July 5
B	6.17	10	Jun. 5	23	12
	3.11.14.19	Ap.13	May 9	May 27	Jun. 15
	2.5.8.13.16	20	16	Jun. 3	22
	7.10.15.18	27	23	10	29
C	1.4.9.12	May 4	30	17	July 6
	6.17	11	Jun. 6	24	13
	3.8.11.14.19	Ap.14	Ma.10	May 28	Jun. 16
	2.5.13.16	21	17	Jun. 4	23
D	4.7.10.15.18	28	24	11	30
	1.9.12.17	May 5	31	18	July 7
	6.	12	Jun. 7	25	14
	14.	Ap. 8	May 4	May 22	Jun. 10
E	3.8.11.19	15	11	29	17
	2.5.10.13.16	22	18	Jun. 5	24
	4.7.15.18	29	25	12	July 1
	1.6.9.12.17	May 6	Jun. 1	19	8
F	3.14	Ap. 9	May 5	May 23	Jun. 11
	8.11.16.19	16	12	30	18
	2.5.10.13	23	19	Jun. 6	25
	4.7.12.15.18	30	26	13	July 2
G	1.6.9.17	May 7	Jun. 2	20	9
	3.14	Ap.10	May 6	May 24	Jun. 12
	5.8.11.16.19	17	13	31	19
	2.10.13.18	24	20	Jun. 7	26
H	1.4.7.12.15	May 1	27	14	July 3
	6.9.17	8	Jun. 3	21	10
	3.11.14	Ap.11	May 7	May 25	Jun. 13
	5.8.16.19	18	14	Jun. 1	20
I	2.7.10.13.18	25	21	8	27
	1.4.12.15	May 2	28	15	July 4
	6.9.17	9	Jun. 4	22	11

In 1756, *Easter Term* begins *May 5th*, ends *May 31*. *Trinity Term* begins *June 18*, ends *July 7*.

Note, *Easter Term* begins 17 Days, and ends 43 Days after *Easter*. *Trinity Term* begins 5 Days, and ends 24 Days after *Trinity*. Therefore *Easter Term* continues 27, and *Trinity* 20 Days, inclusive.

III. A Table of the Number of Days, that the *New, Quarter, or Full Moons*, in the *Greg. Account*, go forward in the Month-days of the Year, or the *Lunar Cycle*, (of 19 Yrs, or 235 Synodical Months) advances in certain Periods, from the Beginning of 1600.

Bif. ext.	Yrs go forw of Ch	Greg. Lu. Cy. go forw Days.	Yrs go forw of Ch & c.
B	1600	0	
	1700	1	5300 16
	1800	1	5400 17
	1900	2	5500 17
B	2000	2	5600 17
	2100	2	5700 18
	2200	3	5800 18
	2300	4	5900 19
B	2400	3	6000 19
	2500	4	6100 19
	2600	5	6200 20
	2700	5	6300 21
B	2800	5	6400 20
	2900	6	6500 21
	3000	6	6600 22
	3100	7	6700 23
B	3200	7	6800 22
	3300	7	6900 23
	3400	8	7000 24
	3500	9	7100 24
B	3600	8	7200 24
	3700	9	7300 25
	3800	10	7400 25
	3900	10	7500 26
B	4000	10	7600 26
	4100	11	7700 26
	4200	12	7800 27
	4300	12	7900 28
B	4400	12	8000 27
	4500	13	8100 28
	4600	13	8200 29
	4700	14	8300 29
B	4800	14	8400 29
	4900	14	8500 0
	5000	15	&c.
	5100	16	
B	5200	15	

See the Reason in *Latin Philof.* No. III. last Page.

V. A TABLE, to find the Time of the Paschal or Easter Full Moon, and consequently Easter, for ever, by the Golden Numbers, and Days the Lunar Cycle (of 19 Years) goes forward in any given Period. See Table III.

Paschal Dom		GOLDEN NUMBERS.																		
Full Mo	Let.	i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv	xvi	xvii	xviii	xi
Mar. 21	C	8	19	o	11	22	3	14	25	6	17	28	9	20	1	12	23	4	15	2
22	D	9	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	2
23	E	10	21	2	13	24	5	16	27	8	19	o	11	22	3	14	25	6	17	2
24	F	11	22	3	14	25	6	17	28	9	20	1	12	23	4	15	26	7	18	2
25	G	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	
26	A	13	24	5	16	27	8	19	o	11	22	3	14	25	6	17	28	9	20	
27	B	14	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	21	
28	C	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	o	11	22	
29	D	16	27	8	19	o	11	22	3	14	25	6	17	28	9	20	1	12	23	
30	E	17	28	9	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	
31	F	18	29	10	21	2	13	24	5	16	27	8	19	o	11	22	3	14	25	
Ap. 1	G	19	o	11	22	3	14	25	6	17	28	9	20	1	12	23	4	15	26	
2	A	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	
3	B	21	2	13	24	5	16	27	8	19	o	11	22	3	14	25	6	17	28	
4	C	22	3	14	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	1
5	D	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	o	1
6	E	24	5	16	27	8	19	o	11	22	3	14	25	6	17	28	9	20	1	1
7	F	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	21	2	1
8	G	26	7	18	29	10	21	2	13	24	5	16	27	8	19	o	11	22	3	1
9	A	27	8	19	o	11	22	3	14	25	6	17	28	9	20	1	12	23	4	1
10	B	28	9	20	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	1
11	C	29	10	21	2	13	24	5	16	27	8	19	o	11	22	3	14	25	6	1
12	D	o	11	22	3	14	25	6	17	28	9	20	1	12	23	4	15	26	7	1
13	E	1	12	23	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	1
14	F	2	13	24	5	16	27	8	19	o	11	22	3	14	25	6	17	28	9	2
15	G	3	14	25	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	2
16	A	4	15	26	7	18	29	10	21	2	13	24	5	16	27	8	19	o	11	2
17	B	5	16	27	8	19	o	11	22	3	14	25	6	17	28	9	20	1	12	2
17	B	5	16	27	8	19	o	11	22	3	14	25	7	18	29	10	21	2	13	2
18	C	6	17	28	9	20	1	12	23	4	15	26	7	18	29	10	21	2	13	2
18	C	7	18	29	10	21	2	13	24	5	16	27	8	19	o	11	22	3	14	2

EXAMPLE. To find the Full Moon before Easter Sunday, in the Year 1756?
 Against the Period 1700, in the TABLE preceding stands 1, and the Golden Number for 1756 being 9, against 1, the Days gone forward in that Period under the Golden Number ix, in this Table, stands April 15, in the first Column for Answer. And the Dominical Letter for 1756 being C, reckon on from April 15 to C, April 18 is Easter-Sunday, and so for other Cases.

NOTE, The Days the Cycle is gone forward, standing under the given Golden Number, and against a certain Month-day, serve for a given Period according to TABLE preceding.

V. A TABLE, shewing, by the *Golden Number*, the *Middle New*, *Full*, and *Quarter Moons*, from 1710 to 1899, *Gregorian Style*, and may be continued for ever, by adding the Days they go forward in a given Period, beyond that Time. See Table III.

January xxxi.					Feb. xxviii.					March xxxi.				
G. N.	N. M.	F. Q.	F. M.	L. Q.	N. M.	F. Q.	F. M.	L. Q.		N. M.	F. Q.	F. M.	L. Q.	
1	30	7	15	23	28	6	13	21		30	8	15	23	
2	19	26	4	12	17	25	3	10		19	27	5	12	
3	8	16	23	131	7	14	22	29		7	15	22	30	
4	26	4	11	19	25	3	10	17		26	4	11	19	
5	16	23	131	8	14	22	29	7		16	23	131	8	
6	5	12	20	27	3	11	18	26		5	13	20	28	
7	24	131	9	17	22	—	8	15		23	130	8	16	
8	12	20	27	5	11	18	25	3		12	20	27	5	
9	131	9	16	24	—	8	15	23		131	9	16	24	
10	20	28	6	13	19	27	4	12		21	28	6	14	
11	10	17	25	3	8	16	23	1		9	17	24	131	
12	28	6	13	20	26	4	11	19		28	6	13	21	
13	17	25	3	10	16	23	1	9		17	25	3	10	
14	6	14	21	29	5	13	20	27		7	13	22	29	
15	25	3	11	18	24	2	9	17		24	2	10	17	
16	14	21	29	6	12	20	27	5		14	21	29	6	
17	3	11	18	25	2	9	16	24		3	11	18	26	
18	22	29	7	15	20	8	6	13		22	30	7	15	
19	11	19	26	4	10	18	25	3		10	18	25	3	
April xxx.					May xxxi.					June xxx.				
1	28	6	13	21	28	6	13	21		26	4	11	19	
2	18	25	3	11	17	25	3	10		14	23	130	9	
3	6	14	21	28	6	13	20	28		4	12	19	26	
4	25	3	10	18	24	2	10	17		23	130	8	16	
5	14	22	29	7	14	21	28	6		12	20	27	5	
6	4	11	18	26	3	11	18	26		130	9	17	24	
7	22	29	7	14	21	29	6	14		20	27	5	12	
8	11	19	26	3	10	18	25	3		9	17	24	2	
9	30	8	15	23	29	7	15	22		28	6	13	21	
10	19	27	4	12	19	27	4	12		17	25	3	10	
11	7	15	22	30	7	15	22	29		6	13	20	28	
12	27	4	12	19	26	4	11	19		24	2	10	17	
13	16	23	131	8	15	23	130	8		14	21	28	6	
14	5	13	20	28	5	12	19	27		3	11	18	26	
15	23	131	8	16	23	30	8	15		21	29	6	14	
16	13	20	27	5	12	19	26	4		11	18	25	3	
17	2	9	17	24	131	9	16	24		29	7	14	22	
18	21	28	6	14	20	18	6	13		19	26	4	12	
19	9	17	24	2	9	16	23	131		7	15	22	20	

July xxxi.					August xxxi.					September xxx.				
G.	N.	F.	F.	L.	N.	F.	F.	L.		N.	F.	F.	L.	
N.	M.	Q.	M.	Q.	M.	Q.	M.	Q.		M.	Q.	M.	Q.	
●	☾	☾	☾	☾	●	☾	●	☾		●	☾	☾	☾	
1	26	4	11	19	24	2	9	17		23	13	8	16	
2	15	23	10	8	14	21	18	6		12	20	27	5	
3	3	11	18	26	2	10	17	25		130	8	15	23	
4	22	30	8	15	21	28	6	14		20	27	5	12	
5	12	19	26	4	10	18	25	3		9	17	24	2	
6	131	9	15	24	29	7	14	22		28	5	13	21	
7	19	27	4	12	18	25	3	11		16	24	1	9	
8	8	16	23	131	7	15	22	29		5	14	20	28	
9	27	5	12	20	26	4	11	19		24	2	10	17	
10	17	24	2	10	15	23	130	9		14	21	28	6	
11	5	13	20	27	4	11	19	26		2	10	17	25	
12	24	131	9	17	22	30	7	15		21	29	6	14	
13	13	21	28	6	12	19	27	4		10	18	25	3	
14	3	10	17	25	131	9	16	24		29	7	14	22	
15	20	28	6	13	19	27	5	12		18	25	3	11	
16	10	18	25	3	8	26	23	131		7	15	22	29	
17	29	7	14	22	27	5	13	20		26	4	11	19	
18	18	26	3	11	17	24	2	10		15	23	130	9	
19	7	14	21	29	5	13	20	28		4	11	18	26	
October xxxi.					Novem. xxx.					December xxxi.				
1	22	30	8	15	21	29	6	14		20	28	6	13	
2	12	19	26	4	10	18	25	3		10	17	25	3	
3	30	8	15	23	28	6	13	21		28	6	13	21	
4	19	27	4	12	17	25	3	10		17	25	3	10	
5	8	16	23	131	7	14	22	29		6	14	21	29	
6	27	5	12	20	26	3	11	19		25	3	11	18	
7	16	23	131	8	14	22	29	7		14	21	28	6	
8	5	13	19	27	3	11	18	26		3	11	18	26	
9	24	2	9	17	22	30	8	15		22	29	7	15	
10	13	21	28	7	12	19	26	4		11	19	26	4	
11	131	19	16	24	30	8	15	23		29	7	14	22	
12	20	28	6	13	19	27	4	12		18	26	4	11	
13	10	18	25	3	8	16	23	130		8	16	23	30	
14	29	7	14	22	27	5	12	20		27	5	12	20	
15	17	25	3	10	16	23	1	9		15	23	30	8	
16	6	14	21	29	5	13	20	27		5	12	20	27	
17	25	3	11	18	24	2	9	17		23	130	9	16	
18	15	23	29	7	13	21	28	6		13	21	28	6	
19	3	11	18	26	2	9	16	23		131	0	16	24	

EXAMPLE. To find what Time the Easter Full Moon happens 1750, the Golden Number being 9.

In the Column of Full Moon, under April, against 9, on the left Hand, stands the 15th Day of that Month, being the first Full Moon after the 21st of March; agreeing with Lord Macclesfield's Table of Easter Full Moons. Counting on to Sunday, Easter falls on April 18, 1756; the Domin. Letter being C. The like to be observed in other Cases.

VI. A TABLE shewing by the *Moon's Age*, and *Place*, when she is about the *Middle* of each Sign, the *near Time* of her *Setting* and *Rising* after *Change* and *Full*. By which her *Rising* and *Setting* at other *Positions* in each Sign may be estimated for most Parts of *England*.

D's Age.	Moon's mean Southing, and her Half Time above the Horizon, when she is in the Middle of each Sign, added or subtracted.											
	♊ 8h	♋ 10m	♌ 7h	♍ 31m	♎ 6h	♏ 34m	♐ 5h	♑ 32m	♒ 4h	♓ 37m	♊ 3h	♋ 58m
	Sets.		Sets.		Sets.		Sets.		Sets.		Sets.	
1	8 A.	58	8 A.	19	7 A.	22	6 A.	20	5 A.	25	4 A.	46
2	9	46	9	7	8	10	7	8	6	13	5	34
3	10	34	9	55	8	58	7	56	7	1	6	22
4	11	22	10	43	9	46	8	44	7	49	7	10
5	12 M.	10	11	31	10	34	9	32	8	37	7	58
6	0	58	12 M.	19	11	22	10	20	9	25	8	46
7	1	46	1	7	12 M.	10	11	8	10	13	9	34
8	2	34	1	55	0	58	11	56	11	1	10	22
9	3	22	2	43	1	46	12 M.	44	11	49	11	10
10	4	10	3	31	2	34	1	32	12 M.	37	11	58
11	4	58	4	19	3	22	2	20	1	25	12 M.	46
12	5	46	5	7	4	10	3	8	2	13	1	34
13	6	34	5	55	4	58	3	56	3	1	2	22
14	7	22	6	43	5	46	4	44	3	49	3	10
	rises.		rises.		rises.		rises.		rises.		rises.	
15	3 A.	50	4 A.	20	5	26	6 A.	24	7 A.	23	8 A.	2
16	4	38	5	17	6	14	7	16	8	11	8	50
17	5	26	6	5	7	2	8	4	8	59	9	38
18	6	14	6	53	7	50	8	52	9	47	10	26
19	7	2	7	41	8	38	9	40	10	35	11	14
20	7	50	8	29	9	26	10	28	11	23	12 M.	2
21	8	38	9	17	10	14	11	16	12 M.	11	0	50
22	9	26	10	5	11	2	12 M.	4	0	59	1	38
23	10	14	10	53	11	50	0	52	1	47	2	26
24	11	2	11	41	12 M.	38	1	40	2	35	3	14
25	11	50	12 M.	19	1	26	2	28	3	23	4	2
26	12 M.	38	1	17	2	14	3	16	4	11	4	50
27	1	26	2	5	3	2	4	4	4	59	5	38
28	2	14	2	53	3	50	4	52	5	47	6	26
29	3	2	3	41	4	38	5	40	6	35	7	14
30	3	50	4	29	5	26	6	28	7	23	8	2

EXAMP. I. To find the Time of the Moon's Setting at about 12 Days old, and her Place about the Middle of Sagittary?

Against 12 Days Age, under ♏ stands 1h 34m M. for Answer. So likewise at 8 Days old, and Place the Beginning of ♐, the Setting is between 0 M. 58, and 11 A. 56, the two Middles of ♎ and ♐, viz. about 0 M. 27. And the same to be observed of her Rising from the Full to New.

EX. II. To find the Moon's Rising at 19 Days old, when she is in the latter End of Aquarius? Against 19, under ♒, is 10 A. 35, and under ♑ 9 A. 40, for the Middle of each Sign; therefore the middle Time 10 A. 7 is the Time of Rising at the End of ♒. Whence other intermediate Times may be known; the Moon being considered without Latitude.

VII. A TABLE of the *Eclipses of the Sun and Moon at London, for the Years. As they will nearly happen, till the End of the Year 1766.*

Yrs.	S. or M	Visible or Invisib.	Middle Time of happening, or greatest Obscuration.	D's Longitude.	D's Lat.	Afc. or Def.	Digit eclipsed.
1755	☉	invisib.	March 12 ^d 9 ^h 45 ^m	☿ 22° 2'	0° 40'	ND	
	☾	visible.	March 27 12 12	☿ 7 59	0° 42'	SA	7 1
	☉	invisib.	September 5 20 30	☿ 13 19	0° 37'	SD	
	☾	invisib.	September 19 22 40	☿ 27 4	0° 34'	SA	
1756	☉	invisib.	February 29 13 48	☿ 10 58	0° 8'	ND	
	☉	invisib.	August 25 7 12	☿ 2 52	0° 7'	NA	
1757	☾	Set Ecl.	February 3 19 6	☿ 15 48	0° 38'	SD	6 4
	☉	invisib.	February 18 1 2	☿ 0 9	0° 41'	SA	
	☾	visible.	July 30 11 53	☿ 7 51	0° 30'	ND	11 3
	☉	invisib.	August 14 10 45	☿ 22 10	0° 49'	NA	
	☉	invisib.	January 9 6 11	☿ 19 33	1° 20'	ND	
1758	☾	Set Ecl.	January 23 18 13	☿ 4 20	0° 0'	NA	21 2
	☉	invisib.	February 7 16 37	☿ 19 28	0° 23'	SA	
	☉	invisib.	July 4 20 55	☿ 13 8	1° 5'	SD	
	☾	invisib.	July 20 4 44	☿ 27 45	0° 15'	SA	
	☉	invisib.	December 29 19 29	☿ 8 40	0° 40'	ND	
1759	☾	Set Ecl.	January 12 19 46	☿ 22 55	0° 39'	NA	6 4
	☉	invisib.	June 24 5 23	☿ 2 46	0° 13'	SD	
	☉	invisib.	December 19 2 14	☿ 27 29	0° 0'	SA	
1760	☾	visible.	May 29 9 35	☿ 8 51	0° 52'	ND	0 4
	☾	visible.	June 12 19 22	☿ 22 36	0° 20'	SD	4 5
	☾	visible.	November 22 9 18	☿ 1 8	0° 44'	SD	6 3
	☉	invisib.	October 7 2 2	☿ 16 2	0° 38'	SA	
1761	☉	invisib.	May 4 5 40	☿ 14 33	1° 24'	SD	
	☾	visible.	May 18 10 2	☿ 28 3	0° 11'	ND	17 3
	☉	invisib.	June 2 13 24	☿ 12 34	1° 9'	ND	
	☉	invisib.	October 27 10 29	☿ 4 14	1° 27'	NA	
	☾	invisib.	November 11 23 43	☿ 20 21	0° 2'	SD	
	☉	invisib.	November 26 2 15	☿ 4 38	1° 16'	SA	
1762	☉	invisib.	April 23 17 28	☿ 3 58	0° 42'	SD	
	☾	visible.	May 7 15 36	☿ 17 26	0° 32'	SA	10
	☾	visible.	October 16 20 12	☿ 24 0	0° 16'	ND	6 1
	☾	visible.	November 1 5 11	☿ 9 23	0° 39'	NA	6 4
1763	☉	invisib.	April 12 22 15	☿ 23 12	0° 15'	SD	
	☉	invisib.	October 6 13 5	☿ 13 28	0° 2'	ND	
1764	☾	visible.	March 22 7 15	☿ 27 56	0° 39'	ND	8 1
	☉	visible.	August 31 22 9	☿ 12 10	0° 4'	SD	10
	☾	invisib.	October 10 19 18	☿ 18 0	0° 42'	SD	
	☉	invisib.	March 25 5 5	☿ 3 3	0° 41'	SA	
1765	☉	invisib.	February 19 11 45	☿ 1 40	1° 21'	SD	
	☾	invisib.	March 7 1 16	☿ 17 16	0° 3'	SA	
	☾	invisib.	March 21 1 0	☿ 0 11	1° 19'	NA	
	☉	visible.	August 16 4 19	☿ 23 53	0° 23'	ND	2 4
	☾	invisib.	August 30 4 0	☿ 7 24			
	☉	invisib.	September 14 17 0	☿ 22 31			
1766	☉	invisib.	February 8 23 48	☿ 20 50			
	☾	visible.	February 24 7 20	☿ 6 15	0° 44'	SA	
	☉	visible.	August 5 6 41	☿ 13 11	0° 21'	SA	
	☾	invisib.	August 19 19 39	☿ 27 10			

VIII. HIGH WATER, at the following Ports and Places, in Hours & Minutes, before or after the Time of High Water at London.

Note, a stands for after, and b, for before.

Amsterdam, a 0 ^h 30'	Hull, a 3 ^h 30'	Portland, a 5 ^h
Brest, a 1 0	Harborough, a 3 30	Portsmouth, b 2
Bidlington Pier, a 2 0	Harflew, a 5 50	Rocheſter, b 1
Bridgewater, a 4 40	Harwich, b 3 30	Rammekins, b 1
Buoy of Nore, b 1 30	Haſtings, b 4 0	Redſand, b 2
Calais, b 3 0	St. Helens, b 5 30	Scilly, a 1
Dartmouth, a 3 30	Havre de grace, b 5 30	Shoe Bacon, b 2
Dover, b 3 0	Loo, a 3 10	Spithead, b 3 0
Dieppe, b 4 0	Lime, a 3 50	Shoreham, b 4 0
Exmouth, a 3 50	Leigh, b 0 5	Tinmouth Hea. a 0 30
Fowey, a 3 10	Mountſbay, a 1 15	Tinmouth, a 3 40
Fluſhing, b 1 30	Maze, b 0 5	Torbay, a 3 40
Gouries Gut, b 0 5	Needles, b 4 40	Topſham, a 3 50
Graveſend, b 1 20	Oſtend, b 2 0	Texel, a 4 40
Gunfleet, b 4 0	Orfordneſs, b 4 0	Weymouth, a 4 25
Hartlepool, a 0 30	Plymouth. a 3 10	Yarmouth Pier, b 4 40
Humber, a 2 0		

E X A M P L E.

To find the Time of High-Water at Graveſend the 12th Day of the Moon's Age?

At London, on that Day, it is high Water — 12^h 4^m Night
For Graveſend ſubtract — 1 20

High Water at Graveſend — 10 44 Night.

And the like for other Places, by adding or ſubtracting to or from High Water at London.

To find the Value of any Number of Gold Pieces of 18 s. 27 s. 36 s. or 3 l. 12 s. each?

R U L E.

Multiply the Number of Gold Pieces by 9 Tenths, (the Decimal Parts, which 18 s. is of a Pound) cur off a Decimal to the Right Hand, and the *Product* will be the Value of the Pieces at 18 s. each, in Pounds and Decimal Parts. Add half for the Value of 27 s. Pieces; and multiply by 2 or 4 for the Value of 36 s. or 3 l. 12 s. Pieces reſpectively.

For every Decimal cut off reckon 2 s.

Example. 323 Pieces.

9

290,7, or 290 l. 14 s. Value at 18 s. each.
Add half 145 l. 7 s.

The firſt Product by 2. 436 1 at 27 s. each.
581,4 or 581 l. 8 s. at 36 s. each.
by 4. 1162,8 or 1162 l. 16 s. at 3 l. 12 s. each.

Note. This Method is much ſafer than truſting to printed Tables.

MONTHS.

Golden
Advance
Numbers Days

XII. A TABLE shewing the
Year and Day of the Month
the Number of Days the Moon
Period beyond that Time, acc

Jan. Oct.	7	1	27	26	25	24	23	22	21	20	19	18	23	6
		2	1	27	26	25	24	23	22	21	20	19	0	7
	18	3	2	1	27	26	25	24	23	22	21	20	41	8
	10	4	3	2	1	27	26	25	24	23	22	21	29	9
Fe. Mar. No.	2	5	4	3	2	1	27	26	25	24	23	22	24	11
		6	5	4	3	2	1	27	26	25	24	23	28	12
December	13	7	6	5	4	3	2	1	27	26	25	24	31	13
		5	8	7	6	5	4	3	2	1	27	26	33	14
April		9	8	7	6	5	4	3	2	1	27	26	35	15
	16	10	9	8	7	6	5	4	3	2	1	27	31	16
		8	11	10	9	8	7	6	5	4	3	2	5	17
May		12	11	10	9	8	7	6	5	4	3	2	40	18
		15	13	12	11	10	9	8	7	6	5	4	10	19
		11	14	13	12	11	10	9	8	7	6	5	41	20
		11	14	13	12	11	10	9	8	7	6	5	13	21
		15	14	13	12	11	10	9	8	7	6	5	53	22
June		16	15	14	13	12	11	10	9	8	7	6	42	23
		14	17	16	15	14	13	12	11	10	9	8	44	24
July		18	17	16	15	14	13	12	11	10	9	8	58	25
		19	18	17	16	15	14	13	12	11	10	9	17	26
		17	20	19	18	17	16	15	14	13	12	11	40	27
		17	20	19	18	17	16	15	14	13	12	11	54	28
		9	21	20	19	18	17	16	15	14	13	12	55	29
August		1	22	21	20	19	18	17	16	15	14	13	11	30
		23	22	21	20	19	18	17	16	15	14	13	24	31
		12	24	23	22	21	20	19	18	17	16	15	4	1
		4	25	24	23	22	21	20	19	18	17	16	5	2
September		26	25	24	23	22	21	20	19	18	17	16	7	3
		15	27	26	25	24	23	22	21	20	19	18	1	4

E X A

To find the Moon's Place on June 19, 1755, the
Against June stands 1, under or above which
left, stands 7 Advance-days, under the Advance-
to the right, stands 1, under or above which it
to the right Hand, stands the End of J
required: Agreeing with the Place by

II. To find the Place or Sign of the

Moon's Place by the Golden Number, for any
till 1899; and will serve for ever, by adding
ns go forward in the Month-days, for a given
ording to the *New Stile*. See Table III.

	the D's Pl. or Sign																Perpetual Pregnoscifications.	D's half Time above the Hor.*
Buo	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	Head	6 ^h 24
Cala	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	Face	6 43
Dart	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	Neck	7 23
Dov	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	Throat	7 39
Dier	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5		
Exm	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	Should.	8 6
Fow	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	Arms	8 15
Flut	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	Hands	
Gou	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	Breast	8 14
Gr	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	Stom.	8 7
Gur	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9		
Hur	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	Back	7 39
	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	Heart	7 23
Mo	1	2	26	25	24	23	22	21	20	19	18	17	16	15	14	13		
A	2	1	27	26	25	24	23	22	21	20	19	18	17	16	15	14	Bowels	6 44
	3	2	1	27	26	25	24	23	22	21	20	19	18	17	16	15	Belly	5 25
	4	3	2	1	27	26	25	24	23	22	21	20	19	18	17	16	Loins	5 42
Am	5	4	3	2	1	27	26	25	24	23	22	21	20	19	18	17	Reins	5 25
Wa	6	5	4	3	2	1	27	26	25	24	23	22	21	20	19	18		
	7	6	5	4	3	2	1	27	26	25	24	23	22	21	20	19	Secrets	4 25
	8	7	6	5	4	3	2	1	27	26	25	24	23	22	21	20		
3 L	9	8	7	6	5	4	3	2	1	27	26	25	24	23	22	21	Thighs	4 2
	10	9	8	7	6	5	4	3	2	1	27	26	25	24	23	22		
	11	10	9	8	7	6	5	4	3	2	1	27	26	25	24	23	Knees	3 55
Par	11	10	9	8	7	6	5	4	3	2	1	27	26	25	24	23		
Har	11	10	9	8	7	6	5	4	3	2	1	27	26	25	24	23		
in	13	12	11	10	9	8	7	6	5	4	3	2	1	27	26	25	Legs	4 30
Pie	14	13	12	11	10	9	8	7	6	5	4	3	2	1	27	26		
Pie	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	27		
F	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Feet	5 25
	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		5 45

M P L E I.

Golden Number being 8.

stands the Day of the Month, viz. 19, against which, to the
ay Column. Now the Golden Number being 8, against which,
ands 7; the Number of the said Advance-days; against which,
g of *Scorpio*, for the Place or Sign the Moon is in
Sphenis for 1755.

the Golden Number being 8.

For finding the Latitude and Longitude by Observation of the Sun and Mo

D.	☉	R. A.	☉	Dec. S.	☉	R. A.	☉	Dec.	☉	So. Lon.	☉	R. A.	☉	H. W.	☉	A
1	28	1° 32' 57"	23°	3' 28"	273°	47'	18°	542'	11	M 28	Sets.	2	A 25	●		
2	28	2 39 12	22 58 22	289	19	18	9	0	A 27	5	A 3	3	29	1		
3	28	3 45 21	22 52 48	304	14	16	25	1	25	6	12	4	12	2		
4	28	4 51 24	22 46 46	318	39	13	41	2	21	7	23	4	51	3		
5	28	5 57 19	22 40 18	332	9	10	20	3	12	8	35	5	22	4		
6	28	7 3 32	22 33 22	344	57	6	36	3	59	9	44	5	51	5		
7	28	8 53	22 26 0	357	5	2	35	4	44	10	52	6	23	6		
8	28	9 14 29	22 18 12	8	57	12	24	5	28	11	56	7	0	7		
9	29	0 19 58	22 9 57	20	25	5	12	6	11	Morn.	7	7	41	D		
10	29	1 25 18	22 1 15	31	54	8	49	6	54	0	59	8	29	9		
11	29	2 30 27	21 52 9	43	32	11	55	7	38	2	1	9	23	10		
12	29	3 35 30	21 42 37	55*	22	14	36	8	23	3	3	10	24	11		
13	29	4 40 22	21 32 39	67	30	16	43	9	9	4	2	11	28	12		
14	29	5 45 4	21 22 16	79*	57	18	5	9	57	4	49	Morn.	13			
15	29	6 49 37	21 13 30	92	42	18	15	10	45	5	52	0	33	14		
16	29	7 54 0	21 0 18	105	42	18	23	11	34	6	41	1	35	15		
17	29	8 58 13	20 48 42	118	51	17	10	Morn.	(rises.	2	31	0				
18	30	0 2 14	20 36 44	131	52	15	6	0	24	5	A 42	3	22	17		
19	30	1 6 5	20 24 22	144	55	12	18	1	14	6	52	4	5	18		
20	30	2 9 45	20 11 36	157	49	8	48	2	3	8	C	4	40	19		
21	30	3 13 13	19 58 39	170*	41	4	49	2	52	9	11	5	10	20		
22	30	4 16 28	19 44 57	183	31	0	37	3	41	10	24	5	41	21		
23	30	5 19 32	19 31 5	196	34	3	S 49	4	30	11	38	6	13	22		
24	30	6 22 24	19 16 50	209	53	7	55	5	20	Morn.	6	53	C			
25	30	7 25 5	19 2 15	223	38	11	52	6	12	0	54	7	42	24		
26	30	8 27 35	18 47 16	237*	59	15	2	7	7	2	9	8	44	25		
27	30	9 29 51	18 32 3	252	39	17	19	8	4	3	21	9	58	26		
28	31	0 31 55	18 16 26	267	48	18	27	9	2	4	29	11	17	27		
29	31	1 33 47	18 0 28	283	1	18	29	10	2	5	30	0	A 40	28		
30	31	2 35 27	17 44 12	298	2	17	16	11	0	6	25	1	54	29		
31	31	3 36 55	17 27 39	312	38	15	4	11	56	D sets.	2	55	●			

n.m. 1^d 12^h 11^{ma}. *f.g.* 4^d 7^h 28^{mm}. *f.m.* 17^d 10^h 30^{mm}. *f.g.* 24^d 6^h 3^{ma}. *n.m.* 31^d 0^h 16^{mm}.

D.	Twil. begins & ends.	☉ rites and sets appart.	L. Day & Day's Incr.	☊ Am. satrifying & sett.	☋ Ea. and Weat.	☌ slow and ☐'s Node.	7 Stars South. & Sett.	Astrono- mical Re- marks.	Hem. II
I	5 ^h 59 ^m 6 I	8 ^h 5 ^m 3 55	7 ^h 50 ² / ₂ o 6	39° OS 2' 39 o	4 ^h 41' 7 19	4 ^m 1 ⁿ 12 ^m 25 ⁿ	8 A 45 ^s 5 M o	3 D wth ♀ D wth ♀	2d 6h 46m 4 I 13
6	5 57 6 3	8 1 ² / ₂ 3 50	7 57 o 13	38 7 4 38 2 7	4 43 7 17	6 18 12 31	8 23 4 38	8 ♀ Aphe. 12 D Apo.	5 29 41 7 14 9
II	5 53 6 7	7 56 ¹ / ₂ 4 3 ² / ₂	8 7 o 22 ¹ / ₂	36 56 36 42	4 45 ¹ / ₂ 7 14	8 25 12 9	8 2 4 16	13 D wth Aldebar.	12 21 30 14 15 58
16	5 49 6 11	7 51 4 9	8 18 o 33 ¹ / ₂	35 14 35 7	4 40 ¹ / ₂ 7 11	10 17 11 49	7 40 3 55	23 D w. ♂ 26 D Per.	16 4 53 19 23 22
21	5 44 6 16	7 45 4 16	8 31 o 46 ¹ / ₂	33 23 33 14	4 52 ¹ / ₂ 7 7	11 50 11 33	7 19 3 33	30 D w. ♀ 31 D w. ♀	21 17 45 23 12 17
26	5 38 6 22	7 37 4 23	8 46 I I	31 16 31 6	4 57 7 2 ¹ / ₂	13 5 11 20	6 58 3 12		25 6 4 27 I 1

FEBRUARY. ROYAL DIARY, or EPHEMERIS. 1756

For finding the Latitude and Longitude by Observation of the Sun and Moon.

D.	☉ R. Af.	☉ Dec. S.	☿ R. Af.	☿ s. De.	♂ So. Lon.	♂ r. fe. Lo.	H. W.	♂ A. O.
1	314° 38' 9"	17° 10' 46"	326° 31'	11° 55'	0 A 49	6 A 1 fet	3 A 44	1 21
2	315 39 11	16 53 35	339 45	8 16	1 39	7 13	4 22	2 22
3	316 40 0	16 36 6	352 23	4 18	2 27	8 24	4 55	3 23
4	317 40 37	16 18 21	4 * 33	0 16	3 13	9 32	5 23	4 24
5	318 41 2	16 0 18	16 22	3 N 41	3 58	10 37	5 51	5 25
6	319 41 15	15 41 59	28 1	7 26	4 42	11 41	6 22	6 26
7	320 41 16	15 23 23	39 40	10 45	5 25	Morn.	6 58	7 27
8	321 41 5	15 4 32	51 * 28	13 37	6 10	0 43	7 40	8 28
9	322 40 41	14 45 26	63 * 28	16 6	6 56	1 44	8 31	9 29
10	323 40 5	14 26 5	75 * 46	17 35	7 43	2 42	9 30	10 30
11	324 39 18	14 6 30	88 21	18 27	8 31	3 37	10 34	11 31
12	325 38 20	13 46 41	101 * 12	18 30	9 20	4 28	11 43	12 31
13	326 37 7	13 26 39	114 17	17 40	10 11	5 14	Morn.	13 2
14	327 35 44	13 6 23	127 * 27	15 54	11 2	5 56	0 51	14 3
15	328 34 10	12 45 54	140 40	13 18	11 53	6 32	1 56	15 4
16	329 32 28	12 25 13	153 51	10 0	Morn.	(rises.	2 52	0 5
17	330 30 32	12 4 21	167 1	6 4	0 43	6 A 55	3 39	17 6
18	331 28 27	11 43 17	180 10	1 45	1 34	8 9	4 19	18 7
19	332 26 11	11 22 2	193 * 24	2 S. 41	2 25	9 26	4 53	19 8
20	333 23 45	11 0 37	206 37	7 1	3 15	10 42	5 24	20 9
21	334 21 8	10 39 0	220 33	10 58	4 7	11 58	5 57	21 10
22	335 18 21	10 17 15	234 44	14 13	5 2	Morn.	6 38	22 11
23	336 15 26	9 55 20	249 * 10	16 46	5 58	1 11	7 28	23 12
24	337 12 21	9 33 16	263 * 51	18 13	6 55	2 19	8 39	24 13
25	338 9 7	9 11 3	278 * 42	18 32	7 53	3 22	9 43	25 14
26	339 5 44	8 48 42	293 * 21	17 43	8 50	4 18	11 1	26 15
27	340 2 12	8 26 14	307 40	15 51	9 46	5 3	0 A 18	27 16
28	340 58 33	8 3 39	321 31	13 7	10 39	5 37	2 37	28 17
29	341 54 46	7 40 55	334 51	9 42	11 31	6 51	2 28	29 18

Q. 8 D. at 4^h 28^m M. F. M. 16 D. at 2^h 21^m M. L. Q. 23 D. at 1^h 33^m M.

Twil. b.	☉ ri. & L. Day,	☉ Am.	☉ Ea.	☉ Slow	7 Stars	Astrono-	Imm. 21	1 rat.
& ends.	sets apt.	& Days	at rifin.	& Node.	& D's south	& mical Re-	d h m s	
London.	London.	Incr.	& fett.	West.	(fet.	marks.		
5 ^h 30 ^m	9 ^h 28 ^m	9 ^h 5 ^m	28 of 31'	5 ^h 3 ^m	14 m 8 s	6 h A 33'	2 with ♀	1 8 37 16
6 30 4	33 1	21 28	15 6 56 1	11 0 m 19	2 m 48 9	9 D Apo.	3 3 5 23	4 21 33 34
5 22 7	19 9 22 1	25 53 1	38 25 41	6 51 1 11	14 38 6	13 with Aldeba.	6 16 1 46	8 10 30 2
6 38 4	4 1 1	38 25 41	6 51 1 11	14 38 6	13 with ♂.	11 D with	10 4 58 21	11 23 26 42
5 14 7	10 9 40 1	23 10 1 5	14 14 46	5 53 2	8 19 D with	21 21 Ap.	13 17 55 5	15 12 23 31
6 46 4	5 1 1	56 22 57	6 46 10	56 2 8	19 D with	21 21 Ap.	17 6 52 0	19 1 20 31
5 6 7	1 9 59	20 21 5	19 1 14	37 5 34	21 21 Ap.	8 Peri.	19 1 20 31	20 19 49 4
6 55 5	0 2 15	20 7 6	40 10	54 1 49	22 D Peri.	27 D with	22 14 17 39	24 8 46 16
4 57 6	5 10 18	17 24 5	25 14 8	5 15 1	30 27 D with	h.	26 3 14 57	27 21 43 43
7 4 5	9 2 24	17 10 6	34 10	53 1 11			29 16 12 28	
6 4 48	6 4 1 10	38 14 23	5 31 13	25 5 56				
7 13 5	19 2 53	14 8 6	28 10	52 1 11				

18^d 15^h 17^m 10^s ap. T. An. Eq. + 24^s true Yr 365^d 5^h 49^m 19^s.

For finding the Latitude and Longitude by Observation of the Sun and M

D.	☉ R. Alc.	☉ Dec. S.	☉'s R.A.	☉'s De.	☉ So. Lon.	☉ r. se. Lo.	H. W.	D
1	342° 50' 50"	7° 18' 6"	347° 38'	5 S 45	0 A 20	Sets	3 A 18	(
2	343 46 47	6 55 10	359 56	1 51	1	7 A 15	4 0	0
3	344 46 37	6 32 7	12	2 N 13	1	53 8	23 4	32
4	345 38 20	6 9 2	23*55	6 4	2	38 9	28 5	2
5	346 33 56	5 45 49	35 36	9 34	3	22 10	32 5	28
6	347 29 27	5 22 30	47 25	12 32	4	7 11	33 5	57
7	348 24 50	4 59 13	59 20	15 14	4	53 Morn.	6 30	
8	349 20 8	4 35 48	71 30	17 4	5	40 0	33 7	11
9	350 15 22	4 12 19	83*53	18 14	6	28 1	30 8	2
10	351 10 30	3 48 48	96*32	18 35	7	16 2	23 8	55
11	352 5 31	3 25 15	109*23	18 4	8	5 3	12 10	0 1
12	353 0 28	3 1 38	122*24	16 41	8	56 3	54 11	9 1
13	353 55 22	2 38 0	135*32	14 25	9	46 4	31 Morn.	1
14	354 50 10	2 14 21	148*43	11 22	10	37 5	5 0	18 1
15	355 44 58	1 50 39	162 0	7 36	11	29 5	37 1	24 1
16	356 39 41	1 26 57	175 21	3 22	Morn.	(rises	2 28	(
17	357 34 22	1 3 14	188 52	1 S 9	0	21 7 A	13 3	19 1
18	358 28 59	0 39 33	202 33	5 41	1	13 8	32 4	4 1
19	359 23 33	0 15 51	216 38	9 55	2	6 9	49 4	41 1
20	0 18 6	N. 7 52	231 0	13 31	3	11 5	5 5	16 1
21	1 12 36	0 31 33	245 39	16 18	3	59 Morn.	5 51	2
22	2 7 4	0 55 12	260 36	18 1	4	58 0	19 6	34 2
23	3 1 32	1 18 49	275 17	18 37	5	55 1	24 7	25 0
24	3 56 0	1 42 25	289 54	18 5	6	51 2	21 8	26 2
25	4 50 27	2 5 59	304 8	16 30	7	47 3	10 9	35 2
26	5 44 54	2 29 31	317 51	13 58	8	42 3	49 10	50 2
27	6 39 21	2 52 59	331 2	10 46	9	33 4	23 0 A	1 2
28	7 33 48	3 16 22	343 47	7 4	10	22 4	52 1	6 2
29	8 28 16	3 39 43	356 2	3 8	11	8 5	19 2	3 2
30	9 22 44	4 2 59	8 2	0 N 53	11	54 11	sets. 2	53 2
31	10 17 14	4 26 11	19 53	4 50	0 A 39	7 A 21	3 35	(

n.m. 1st at 2nd m. l.g. 9th at 1st h 9th m. f.m. 16th at 3rd h 27th a. l.g. 23rd at 8th h 43 m. n.m. 30th da

D.	Twil. begins & ends.	☉ rises and sets appar.	L. Day, & Days Incr.	☉ Am. at rising & sett.	☉ Ea. and West.	☉ flow & Node.	7 Stars South. & Set.	Astrono- mical Re- marks.	mm. 2
1	4 ^h 41 ^m 7 20	6 ^h 34 ^m 5 27	10 ^h 53 3 9	11 ^h 56 11 39	5 ^h 36 6 23	12 ^m 38 10 ^m 52	4 ^h 44 ^m 12 A 52	1 ☉ Ecl. in 2 ☉ with 3 ☉ D Apo. with Al- debaran.	4 5 5 23 7 18 9 12 11 7 13 1 14 20 16 14
6	4 ^h 30 7 31	6 24 5 37	11 13 3 29	8 48 8 30	5 42 ¹ 6 17	11 31 10 52	4 22 12 33	17 ☉ D w. 21 ☉ Peri.	18 9 20 3 21 21 23 16 25 10 27 5 28 23
11	4 19 7 42	6 14 5 47	11 33 3 48	5 39 5 21	5 49 6 10 ¹	10 12 10 51	4 4 12 15	25 ☉ D w. 28 ☉ D w. 8	29 10 30 18 31 21
16	4 8 7 53	6 4 5 57	11 53 4 8	2 30 2 10	5 55 6 4	8 46 10 49	3 46 11 56	21 ☉ D w. 24 ☉ Peri.	25 10 27 5 28 23 30 18
21	3 57 8 4	5 54 6 7	12 13 4 28	0 n 41 1 0	6 1 5 58	7 15 11 46	3 28 11 38	25 ☉ D w. 28 ☉ D w. 8	29 10 30 18 31 21
26	3 45 8 16	5 44 6 17	12 32 ¹ 4 48	3 51 4 10	6 7 ¹ 5 52	5 42 10 42	3 10 11 20		29 10 30 18 31 21

☉ V. 19th at 1st h 54^m 30th ap. T. An. Eq. 0th true Yr 365th d 48^m 55^s.

R. Alc.	Dec. N.	D's R. A.	D's De.	So. Lon.	D's Lo.	H. W.	D. A.
1 11° 11' 45"	4° 49' 19"	310° 41'	8° N 30'	1 A 25	8 A 24 Set.	4 A 12	1 21
2 12 6 17	5 12 21	43° 29'	11 46	2 9	9 30	4 43	2 22
3 13 0 52	5 35 16	55 25	14 30	2 55	10 32	5 12	3 23
4 13 55 31	5 58 9	67 33	16 8	3 41	11 28	5 40	4 24
5 14 50 11	6 20 54	79 49	18 2	4 28	Morn.	6 12	5 25
6 15 44 54	6 43 32	92° 19'	18 40	5 16	0 24	6 50	6 26
7 16 39 40	7 6 2	105 0	18 26	6 6	1 14	7 36	7 27
8 17 34 31	7 28 26	117 45	17 23	6 55	1 57	8 30	8 28
9 18 29 25	7 50 43	130 35	15 25	7 43	2 36	9 30	9 29
10 19 24 21	8 12 52	143 31	12 45	8 33	3 12	10 37	10 30
11 20 19 22	8 34 51	156° 31'	9 18	9 23	3 40	11 47	11 31
12 21 14 28	8 56 43	169 43	5 17	10 13	4 10	Morn.	12 A. 1
13 22 9 39	9 18 26	183 6	0 48	11 8	4 39	0 56	13 2
14 23 4 55	9 40 0	196 53	3 S 50	Morn.	5 8	2 3	14 3
15 24 0 16	10 1 24	211 0	8 19	0 2	(rises.	3 2	15 4
16 24 55 43	10 22 38	225 38	12 22	0 57	8 A 54	3 51	16 5
17 25 51 15	10 43 42	240 47	15 36	1 55	10 13	4 33	17 6
18 26 47 51	11 4 35	256 3	17 45	2 55	11 24	5 12	18 7
19 27 42 38	11 25 19	271 22	18 44	3 56	Morn.	5 50	19 8
20 28 38 30	11 45 49	286 24	18 29	4 55	0 25	6 32	20 9
21 29 34 27	12 6 10	300 57	17 4	5 52	1 17	7 22	21 10
22 30 30 29	12 26 18	314 52	14 45	6 47	2 0	8 22	22 11
23 31 26 40	12 46 13	328 9	11 39	7 38	2 35	9 23	23 12
24 32 22 58	13 5 56	340 50	8 6	8 27	3 5	10 29	24 13
25 33 19 23	13 25 26	353 5	4 15	9 14	3 32	11 35	25 14
26 34 15 56	13 44 44	4 58	0 12	9 59	3 56	0 A 36	26 15
27 35 12 37	14 3 48	16 41	3 N 46	10 43	4 20	1 33	27 16
28 36 9 24	14 22 37	28 22	7 23	11 28	4 44	2 22	28 17
29 37 6 18	14 41 2	40 7	10 55	0 A 13	5 sets.	3 12	29 18
30 38 3 20	14 59 35	51 58	13 52	0 58	8 A 29	3 52	30 19

F. Q. 748 h m Even. F. M. 15 d h 47 m M. L. Q. 21 d h 20 m A. N. M. 29 d h 30 m M.

Twil.	Sun rif.	L. Day	Am.	Sun E.	slow	7 Stars	Astrono-	Imm. 21 Sat.
begins	and sets	& Day's	at rising	and	& D's	South.	mical Re-	12 h 53 m 31
& ends.	appart.	Incr.	& sets.	West.	Node.	& Sett.	marks.	Emerfions.
1 1 h 31 m	h 32	12 h 56	7° N 36	6 h 15	3 m 50	2 h A 48	2 D w. ♀	3 9 32 31
2 8 29	6 28	5 11	7 56	5 44	10 m 22	10 A 58	D Apo.	5 4 1 33
3 2 18	5 23	11 15	10 40	6 21	2 19	2 30	4 D with	6 22 30 34
4 8 43	6 38	5 31	11 15	38	10 22	10 40	Aldebar.	8 16 59 35
5 3 4	5 23	13 35	13 42	6 27	0 54	2 12	5 ♀ Aph.	10 11 28 36
6 8 57	7 48	5 51	14 35	32	10 8	10 22	7 D w. ♂	12 5 57 36
7 2 51	5 33	13 54	16 39	6 33	ofa. 23	1 53	14 D w. ♀	14 0 26 35
8 9 10	6 57	6 10	17 0	5 26	9 53	10 3	16 ♀ Aph.	15 18 55 33
9 2 37	4 54	14 13	19 31	6 39	1 31	1 35	17 D Peri.	17 13 24 32
10 9 24	7 5	6 28	19 51	5 20	9 34	9 45	22 D w. ♀	19 7 53 39
11 2 20	4 45	14 31	22 17	6 44	2 28	1 26	26 ♂ Aph.	21 2 22 27
12 9 41	7 16	6 47	22 37	5 15	9 13	9 27	27 D w. ♂	22 20 51 23
13 2 19	4 58	14 33	24 17	7 48	3 36	2 17		24 15 20 18
14 9 29	7 26	6 59	24 37	5 15	9 13	9 27		26 9 49 17
15 2 19	4 58	14 33	24 17	7 48	3 36	2 17		28 4 18 21
16 9 29	7 26	6 59	24 37	5 15	9 13	9 27		29 22 46 53

21 d h 58 m 33 s ap. T. 22 d h 23 s, true 1 = 36 s 5 d 48 m 32 s.

MAY. ROYAL DIARY, or EPHEMERIS. 17

For finding the Latitude and Longitude by Observation of the Sun and Moon

D.	☉ R. Asc.	☉ Dec. N.	☉ s R. A.	☉ s De.	☉ So. Lon.	☉ r. f. Lo.	H. W.	☉ A
1	39° 0' 33"	15° 17' 42"	64° 0' 37"	16 N 14	1 A 43	9 A 25	Set.	4 A 25
2	39 57 52	15 35 33	76 19 17	52	2 30	10 25	4 57	3
3	40 55 20	15 53 8	88 50 18	46	3 18	11 16	5 26	4
4	41 52 55	16 10 28	101 16 18	48	4 6	Morn.	5 56	5
5	42 50 39	16 27 33	113 51 18	1	4 54	0	6 31	6
6	43 48 32	16 44 21	126 28 16	23	5 42	0	7 13	7
7	44 46 35	17 0 52	139 7 13	58	6 30	1	8 4	8
8	45 44 45	17 17 8	151 44 10	51	7 19	1	9 59	9
9	46 42 3	17 33 5	164 32 7	4	8 8	2	10 3	10
10	47 41 32	17 48 45	177 32 2	50	8 58	2	11 11	11
11	48 40 7	18 4 6	190 54 1	45	9 50	3	Morn.	12
12	49 38 52	18 19 10	204 43 6	22	10 45	3	0 24	13
13	50 37 45	18 33 55	219 10 10	41	11 42	4	1 32	14
14	51 36 47	18 48 23	234 13 14	24	Morn.	(rises	2 40	15
15	52 35 57	19 2 30	249 46 17	9	0 41	9 A	3 37	16
16	53 35 18	19 16 21	265 35 18	41	1 43	10 16	4 25	17
17	54 34 44	19 29 48	281 21 18	53	2 42	11 15	5 4	18
18	55 34 21	19 42 57	296 38 17	50	3 41	Morn.	5 41	19
19	56 34 5	19 55 47	311 9 15	52	4 40	0	6 20	20
20	57 33 59	20 8 16	324 55 12	44	5 36	0	7 7	21
21	58 34 0	20 20 24	338 3 9	9	6 27	1	8 0	22
22	59 34 10	20 32 12	350 27 5	19	7 15	1	8 54	23
23	60 34 27	20 43 39	2 22 1	17	8 0	2	9 53	24
24	61 34 50	20 54 44	14 1 2	N 54	8 43	2	10 51	25
25	62 35 22	21 5 28	25 37 6	35	9 27	2	11 53	26
26	63 36 3	21 15 50	37 13 10	4	10 11	3	0 51	27
27	64 36 51	21 25 51	49 0 13	10	10 55	3	1 48	28
28	65 37 44	21 35 28	60 58 15	43	11 40	☉ sets.	2 38	29
29	66 38 44	21 44 44	73 9 17	36	0 A 26	8 A	3 24	30
30	67 39 51	21 53 37	85 34 18	44	1 14	9	4 5	31
31	68 41 52	22 2 8	98 6 19	2	2 10	0	4 39	32

☉ Q. 7d. 0h. 8m. A. F. M. 14d. 9h. 49m M. LQ. 21d. 1h. 18m. M. NM. 28d. 11h. 57m

D.	Twil. begins & ends.	Sun. rif. and sets.	L. Day & Ince.	☉ Am. at rising & setting.	Sun. E. and West.	Sun. fast & D's Node.	7. Stars South & Sett.	Astrono- mical Re- marks.	Em. 21
1	2h 2m	5h 36m	14h 49	24 N 57	6h 50	3m 12s	oh A 57	1 ☉ Apog.	3 11 4
1	9 59	7 25	7 5	25 14	5 9	8m 49	- Set	3 ☉ w. ♀	5 6 1
6	1 46	4 27	15 6	27 25	6 55	3 43	0 38	6 ☉ w. ♂	7 0 4
10	16 7	34 7	22 7	27 44	5 4	8 23	Helia-	11 ☉ w. ♀	8 19 1
11	1 24	4 19	15 22	29 45	7 0	4 0	0 19	15 ☉ Perig	10 13 3
10	38 7	42 7	38 7	30 35	0 7	55	cally.	19 ☉ w. ♀	12 8
16	1 11	4 11	15 38	31 55	7 4	4 2	11 M 59	29 ☉ Apo.	14 2 3
12	3 7	49 7	53 7	31 11	4 55	7 25		30 ☉ w. ♂	15 21
21	0 15	4 5	15 50	33 51	7 8	3 50	11 39		17 15 3
12	4 7	55 7	8 6	34 54	50	6 54			19 10
26	No Night.	3 58	16 4	35 33	7 12	3 24	11 19		21 4 3
		8 2	8 19	35 46	4 48	6 20			22 22 5
									24 17 2
									26 11 5
									28 6 2

☉ 1120^d 5^h 55^m 7^s ap. T. An. Eq. — 49°, true Yr 365^d 5^h 48^m 6^s.

5d, 12h, 17m. A. FM, 12d, 2h, 34m. A. LQ, 10d, 1h, 11m. A. NM: 27d, 2h, 54m. A.

[illegible]

For finding the Latitude and Longitude by Observation of the Sun and Moon

D.	Sun's R.A.	Sun's D.N.	S.K.A.	S.De.	So. Lo.	Pl. Lo.	Pl. W.	D.
1	100° 45' 49	23° 6' 50"	145° 19'	12 N 58	3 A 4	10 A 18	5 A 17	4
2	101 47 46	23 2 25	157*41	9 38	3 51	10 45	5 47	5
3	102 49 41	22 57 31	170° 6	5 48	4 38	11 9	6 19	6
4	103 51 30	22 52 25	182 31	1 36	5 26	11 34	6 58	7
5	104 53 14	22 46 30	195*15	2 S 47	6 15	11 59	7 46	8
6	105 54 53	22 40 33	208*24	7 8	7 5	Morn.		9
7	106 56 27	22 34 6	222*8	11 11	7 58	0 26	9 50	10
8	107 57 54	22 27 16	236*37	14 43	8 56	1 11	11 9	11
9	108 59 17	22 20 2	251*51	17 21	9 56	1 40	Morn.	12
10	110 0 33	22 12 26	267*41	18 45	10 58	2 28	0 32	13
11	111 1 42	22 4 27	283*30	18 54	12 0	(rises		1 52
12	112 2 44	21 56 5	299*13	17 46	Morn.	8 A 21	3 0	15
13	113 3 40	21 47 20	314*21	15 25	1 0	9 0	3 54	16
14	114 4 29	21 38 13	328*44	12 9	1 57	9 34	4 35	17
15	115 5 11	21 28 43	342*24	8 17	2 50	10 3	5 9	18
16	116 5 47	21 18 54	355 8	4 12	3 40	10 28	5 40	19
17	117 6 14	21 8 39	7 28	0 N 3	4 27	10 51	6 11	20
18	118 6 33	20 58 4	19 24	4 7	5 13	11 13	6 47	21
19	119 6 44	20 47 9	31 10	7 55	5 58	11 38	7 28	22
20	120 6 47	20 35 52	42 55	11 10	6 42	Morn.		23
21	121 6 40	20 24 15	54 46	14 13	7 26	0 6	9 8	24
22	122 6 25	20 12 16	66 49	16 31	8 11	0 36	10 7	25
23	123 6 120	0 0	79 8	18 7	8 58	1 9	11 12	26
24	124 5 28	19 47 20	91 38	19 0	9 46	1 48	0 A 12	27
25	125 4 47	19 34 21	104 17	19 1	10 34	2 34	1 21	28
26	126 3 59	19 21 5	117 0	18 0	11 23	3 27	2 19	29
27	127 3 2	19 7 27	129 43	16 16	0 A 12	sets.		3 11
28	128 1 54	18 53 30	142 21	13 44	1 0	8 A 21	3 54	1
29	129 0 37	18 39 16	154 48	10 33	1 47	8 48	4 28	2
30	129 59 11	18 24 43	167 16	6 51	2 34	9 13	5 0	3
31	130 57 36	18 0 51	179 42	2 42	3 22	9 37	5 28	4

F Q. 5d. 9h. 13m. M. F M. 11h. 16m. N. L Q. 19d. 1h. 54m. M. N M. 27d. 5h. 12r

D.	Twil. begins & ends.	Sun rif. & appart.	L. Day's Incre.	Am. Sun E. at rising and West.	Sun flo. and 's Nodc.	7 Stars & Sett.	Astronomical Remarks.	Em. 24 11
1	Twil.	3h 45m 8 15	16h 30 0 5	30° N y' 39 6	7h 19 4 41	3m 19s 3m 28	8h M 51 12 A 36	1 w. ♀ 2 w. ♂ 3 Aph. 5 w. ♀ 9 Perig. 13 w. ♀ 22 w. with Aldeb. 23 w. Apo. 26 w. ♂ 29 w. ♀
6	Twil.	3 48 8 11½	16 23½ 0 11½	38 20 38 14	7 17½ 4 42½	4 12 4 47	8 30 12 16	6 4 4 7 23 9 17 11 12 13 6 4
11	Twil.	3 52 8 7	16 15 0 20	37 15 37 4	7 15½ 4 45	4 57 2 31	8 10 11 55	13 w. ♀ 22 w. with Aldeb. 23 w. Apo. 26 w. ♂ 29 w. ♀
16	Twil.	3 57 8 2	16 4 0 30½	35 51 35 31	7 12½ 4 48	5 30 2 18	7 49 11 35	23 w. Apo. 26 w. ♂ 29 w. ♀
21	Twil.	4 31 7 56	15 52½ 0 42½	34 12 33 57	7 9 5 51½	5 50 8 11	7 29 11 15	23 w. ♀ 25 10 27 10 3
26	Twil.	4 10 7 49	15 39 0 56	32 10 32 1	7 5 5 53½	5 57 12 10	7 10 10 55	29 4 5 30 23 2

© Ω 22d 1h 54m 9ap. 1. An. Eq. — 5d. true Y 36d 5h 47m 57s

Q. 3d. 3h. 47m. A. FM. 10d. 7h. 21m. M. LQ. 17d. 5h. 58m. A. NM. 25d. 6h. 43m. A

[illegible]

For finding the Latitude and Longitude by Observation of the Sun and Moon.

Sun's R.A.	Sun's D.N.	D's R.A.	D's De.	So. Len.	Dr. sc. Lo.	H. W.	D.A.	O.S
165° 55' 34	8° 4' 52"	243 * 18	15 S 51	5 A 43	10 A 23 fets	8 A 18	D	21
161 49 56	7 42 53	257 * 55	17 56	6 41 11	10 10	8 16	8	22
162 44 17	7 20 46	272 * 54	18 55	7 39	Morn.	9 25	9	23
163 38 34	6 58 33	288 0 18	44	8 37 0	6 10	45	10	24
164 32 47	6 36 12	302 * 53	17 18	9 35	1 11	Morn.	11	25
165 26 58	6 13 46	317 * 25	14 49	10 32	2 23	0 3	12	26
166 21 6	5 51 12	331 * 28	11 29	11 25	3 36	1 19	13	27
167 15 11	5 28 33	344 57	7 35	Morn.	(rises	2 21	O	28
168 9 14	5 5 49	357 53	3 20	0 15	7 A 3	3 14	15	29
169 3 13	4 42 58	10 * 26	0 N 57	1 4	7 27	3 57	16	30
169 57 12	4 20 3	22 * 42	5 7	1 52	7 53	4 31	17	31
170 51 9	3 57 4	34 * 48	8 56	2 39	8 23	4 56	18	S. 1
171 45 4	3 34 1	46 * 52	12 18	3 24	8 47	5 29	19	2
172 38 57	3 10 53	59 * 1	15 4	4 10	9 18	5 59	20	3
173 32 51	2 47 43	71 * 15	17 9	4 57	9 55	6 34	21	4
174 26 45	2 24 28	83 35	18 30	5 44	10 35	7 15	(	5
175 20 40	2 1 10	96 * 7	19 2	6 32	11 23	8 6	23	6
176 14 34	1 37 50	108 43	18 47	7 21	Morn.	9 1	24	7
177 8 29	1 14 28	121 24	17 35	8 10	0 15	10 6	25	8
178 2 25	0 51 4	134 * 6	15 30	8 59	1 15	11 14	26	9
178 56 23	0 27 38	146 * 49	12 41	9 47	2 20	0 A 20	27	10
179 50 21	0 4 12	159 34	9 14	10 36	3 28	1 24	28	11
180 44 20	0 S 19	172 16	5 14	11 25	4 40	2 21	29	12
181 38 22	0 42 44	185 9	0 51	0 A 15	D fets.	3 13	●	13
182 32 27	1 6 12	198 19	3 S 41	1 5	6 A 52	3 58	1	19
183 26 34	1 29 40	211 45	8 4	1 57	7 21	4 35	2	15
184 20 43	1 53 7	225 36	12 2	2 51	7 53	5 10	3	16
185 14 57	2 16 34	239 55	15 19	3 47	8 32	5 44	4	17
186 9 14	2 39 59	254 36	17 39	4 41	9 16	6 24	5	18
187 3 36	3 3 23	269 32	18 52	5 44	10 5	7 15	6	19

Q 1d.gh.13m.N. FM. 8d.gh.37m.A. LQ.16d.ch.12m.A. NM.24d.7h.9m.M.

T'wil.	Sun rts.	L. day	Am.	Sun E.	Sun fast	7 Stars	Astrono-	Em. 21st Sat.
begins	nd fets	& day's	at rising	and	and D's	South.	mical Re-	2d 14h 39m 42
& ends.	ppart.	decre.	& fett.	West.	Node.	& rise.	marks.	4 9 8 53
3h 9m	5h 14 1/2	13h 30	13 N 16	6 26	om 29s	4h M 51	2 D Perige	6 3 38 3
8 50	6 44 1/2	3 5	12 53	5 34	10m 46	8 A 37	5 D w. ♀	7 22 7 14
3 23	5 24	13 11	10 13	6 20	2 6	4 32	14 D with	9 16 36 26
8 36	6 35	3 24	9 52	5 40 1/2	1 45	8 18	Aldeb.	11 11 5 39
3 35	5 34	12 51	7 8	6 14	3 47	4 14	16 D Apo.	13 5 34 52
8 24	6 25	3 41	6 49	5 46 1/2	1 43	8 0	21 D w. ♀	15 0 4 6
3 47	6 44	12 32	4 26	8	5 33	3 56	25 D w. ♀	16 18 33 19
8 12	6 15	4 3	3 43	7 53	1 40	7 42	Mw. ♀	18 13 2 31
3 58	5 53 1/2	12 12	0 54	6 2	7 16	3 38	26 D w. ♂	20 7 31 42
8 16	6 52	4 23	0 35	5 59	1 34	7 24	28 Aph.	22 2 0 54
4 9	6 3	11 51	2 S 15	5 55 1/2	8 59	3 21	30 D Peri.	23 20 30 6
7 50	5 56	4 44	2 34	6 5	1 26	7 7	Er. Bdt.	25 14 59 16
							ton, Eq.	27 9 28 27
							d. 27, 1755	29 3 57 36

For finding the Latitude and Longitude by Observation of the Sun and Moon

Sun's R.A.	Sun's D.S.	☽'s R.A.	☽'s De.	☿ So. Lon.	☿ r. fe. Lo.	H. W.	☿ A.	O. S.
187° 58' 3"	30° 26' 47"	284° 23'	18° 59'	6 A 42	11 A 10 fets	8 A 17	☽	20
188 52 33	3 50 7	299 * 14	17 50	7 39	Morn.	9 25	8	21
189 47 7	4 13 24	313 * 35	15 40	8 34	0 20	10 38	9	22
190 41 48	4 36 38	327 * 26	12 37	9 27	1 31	11 53	10	23
191 36 34	4 59 48	340 * 44	8 55	10 17	2 44	Morn.	11	24
192 31 24	5 22 54	353 * 36	4 49	11 6	4 0	0 59	12	25
192 26 21	5 45 58	6 7	0 30	11 54	c 10	2 0	13	26
194 21 26	6 8 57	18 * 22	3 N 42	Morn.	☿ r. fe. Lo.	2 53	☉	27
195 16 38	6 31 50	30 * 35	7 44	0 40	6 A 28	3 36	15	28
196 11 55	6 54 33	42 40	11 16	1 20	6 55	4 12	16	29
197 7 20	7 17 20	54 * 49	14 18	2 11	7 25	4 45	17	30
198 3 53	7 39 57	67 * 3	16 40	2 58	7 59	5 14	18	O. N.
198 58 32	8 2 29	79 * 26	18 18	3 46	8 37	5 44	19	2
199 54 21	8 24 52	91 55	19 7	4 35	9 22	6 16	20	3
200 50 18	8 47 8	104 * 26	19 6	5 23	10 12	6 56	21	4
201 46 23	9 9 17	116 * 58	18 12	6 10	11 8	7 40	☾	5
202 42 37	9 31 19	129 31	16 26	6 57	Morn.	8 33	23	6
203 39 0	9 53 11	142 * 14	0 7	7 45	0 2	9 31	24	7
204 35 33	10 14 56	154 * 34	10 47	8 33	1 16	10 37	25	8
205 32 15	10 36 31	167 * 13	6 59	9 22	2 24	11 46	26	9
206 29 8	10 57 56	180 0	2 41	10 10	3 36	0 50	27	10
207 26 9	11 19 12	193 2	1 S 52	11 0	4 50	1 54	28	11
208 23 21	11 40 17	206 30	6 27	11 52	☽ fets.	2 51	☉	12
209 20 44	12 1 12	220 34	10 45	0 A 46	5 A 57	3 40	1	13
210 18 18	12 21 55	235 8	14 28	1 43	6 34	4 45	2	14
211 16 4	12 42 28	250 9	17 9	2 42	7 16	5 4	3	15
212 14 0	13 2 48	265 26	18 53	3 42	8 8	5 41	4	16
213 12 7	13 22 56	280 46	19 17	4 41	9 8	6 21	5	17
214 10 26	13 42 52	295 * 48	18 26	5 39	10 15	7 10	6	18
215 8 56	14 2 34	310 * 28	16 27	6 36	11 26	8 11	☽	19
216 7 38	14 22 3	324 * 26	13 33	7 29	Morn.	9 12	8	20

1d 3h M. FM 8d 6h 39m M. LQ 16d 7h 48m M. NM 23d 6h 37m A. FQ 30d 10h 26m M.

Twil. begins & ends.	Sun rif. and sets, appar.	L. day & decen.	☉ Am. at rising & sett.	Sun E. and West.	Sun sett. and ☽'s south & Node.	7 Stars rise.	Astronomical Remarks.	Jupiter sets heliacally, too near the solar Rays to be seen this Month.
4h 20m	6h 13m	11h 33	5° 52 3	5h 49 1	10m 35	3h M 3	2 ☽ w. ♀	☉ ☽ 21 ft.
7 39	5 46	5 2	5 42	6 11 1	10m 16	6 A 48	12 ☽ with Aldeb.	Note, the ☉ Entrance into each Sign for 1755 & 1756 is comp. to Thirds of Deg. & Diff. of the Time of the Tr. Yr.
4 30	6 23	11 13	8 32	5 43	12 5	2 44	14 ☽ Aro.	
7 29	5 36	5 22	8 49	6 17 1	1 1	6 30	20 ☽ w. ♀	
4 40	6 33	10 50	11 37	5 37	13 23	2 26	23 ☽ w. ♀	
7 19	5 22 1	5 45	11 54	6 24	0 45	6 12	24 ☽ w. ♂	
4 50	6 42 1	10 34	14 41	5 31	14 30	2 8	25 ☽ w. ♂	
7 9	5 16 1	6 1	14 57	6 29 1	0 26	5 53	27 ☽ Peri.	
5 0	6 52	10 15	17 41	5 25	15 23	1 49	30 ☽ w. ♀	
6 59	5 7	6 20	17 56	6 36	0 3	5 35		
5 9	7 1	9 56	20 35	5 19	15 58	1 30		
6 50 4	57	6 39	20 49	6 41 1	29 38	5 16		

m 22d 12h 1m 17s ap. T. An. Eq. + 8s True Yr. 365d 5h 49m 25s.

VEMBER. ROYAL DIARY, or EPHEMERIS.

Finding the Latitude and Longitude by Observation of the Sun and Moon

Sun's R.A.	Sun's D.S.	M's R.A.	M's De.	S's Lon.	S's Lo.	H. W.	D.A.
17° 6' 32"	14° 41' 18"	337° * 39	10 S 1	8 A 18	0 M 38	10 A 17	9
18 5 39	15 0 19	350° * 26	6 0	9 6	1 50	11 23	10
19 4 58	15 19 4	2 47	1 40	9 53	3 1	Morn.	11
20 4 28	15 37 35	14 54	2 N 30	10 35	4 10	0 28	12
21 4 12	15 55 50	26 53	6 21	11 25	5 19	1 28	13
22 4 9	16 13 49	38° * 53	10 16	Morn.	(Lifes.	2 21	0
23 4 13	16 31 32	51 0	13 29	0 10	5 A 27	3 9	15
24 4 39	16 48 58	63 13	16 9	0 56	5 59	3 50	16
25 5 13	17 6 7	75 35	18 2	1 43	6 35	4 25	17
26 6 0	17 22 59	88° * 2	19 8	2 30	7 18	4 57	18
27 6 59	17 39 31	100 34	19 24	3 17	8 5	5 25	19
28 8 9	17 55 46	113 4	18 48	4 4	8 57	5 55	20
29 9 34	18 11 42	125° * 29	17 24	4 52	9 54	6 30	21
30 11 12	18 27 19	137° * 49	15 10	5 39	10 56	7 10	22
31 13 2	18 42 37	150 6	12 15	6 25	Morn.	7 58	23
232 15 5	18 57 36	162 25	8 43	7 12	0 4	8 50	24
233 17 16	19 12 11	174° * 48	4 39	7 56	1 14	9 52	25
234 19 48	19 26 27	187° * 27	0 14	8 47	2 25	10 57	26
235 22 29	19 40 22	200 30	4 S 23	9 36	3 38	0 A 5	27
236 25 21	19 53 56	214 13	8 51	10 28	4 54	1 13	28
237 28 26	20 7 7	228 39	12 57	11 24	6 12	2 20	29
238 31 43	20 19 57	243 46	16 11	0 A 22	(sets.	3 20	30
239 35 11	20 32 24	259 29	18 33	1 23	5 A 52	4 11	1
240 38 50	20 44 28	275 26	19 19	2 25	6 49	4 53	2
241 42 41	20 56 9	291° * 14	19 4	3 26	7 57	5 31	3
242 46 43	21 7 26	306° * 26	17 20	4 2	9 10	6 10	4
243 50 56	21 18 19	321° * 2	14 35	5 20	10 25	6 53	5
244 55 21	21 28 48	334° * 41	11 9	6 12	11 36	7 42	6
245 59 54	21 38 53	347° * 41	7 11	7 0	Morn.	8 36	7
246 4 38	21 48 33	360° * 5	2 56	7 46	0 40	9 34	8

1. 6d. 10h. 21m. N. LQ. 15d. 3h. 5m. M. NM. 22d. 5h. 13m. M. FQ. 28d. 8h. 35m

Twil. begins & ends.	Sun rif. and sets appart.	L. day & day's decreas.	☉ Am. arising & settg.	Sun E and West.	Sun fall and D's Node.	7. stars South & Set.	Astronomical Remarks.	im 21
5h 18m	7h 13m	9h 34m	23° 55'	5h 12'	16m 15'	1h M 6'	7 Tran. ♀	12d 7h 47m
6 41	4 47	7 1	24 10	6 48½	29° 54'	9 17	8 D with Aldeba.	14 2 10
5 25	7 21½	9 16	26 36	5 7	16 6	0 47	10 D Apo.	15 20 43
6 35	4 38	7 19	26 47	6 54	28 33	8 57	11 ♀ Peri.	17 15 11
5 33	7 30	8 59½	29 6	5 2	15 38	0 27	18 D w. ♀	19 9 30
6 27	4 29½	7 35½	29 16	6 59	28 1	8 37	20 D w. ♀	21 4 7
5 38	7 38	8 44	31 25	4 57	14 48	0 6	22 D w. ♀	22 22 35
6 22	4 21½	7 51	31 33	7 3½	27 27	8 17	24 D w. ♀	24 17 3
5 44	7 45	8 29	33 30	4 52½	13 37	11 A 41	26 D w. ♀	26 11 31
6 16	4 14½	8 6	33 37	7 8	26 54	7 56	28 D Peri.	28 5 59
5 50	7 51½	8 16	35 20	4 49	12 8	11 20	29 D w. ♀	30 0 27
6 10	4 8	8 19	35 27	7 12	26 41	7 35	♀ Perih.	An Equ

☉ 1. 21d 7h 53m 25s ap. T. An. Eq. + 9s True Yr. 365d 5h 49m 4s.

Year.

TWO ECLIPSES in 1756.

1. Of the SUN, *Monday*, the 1st of *March*, at Two in the Morning.

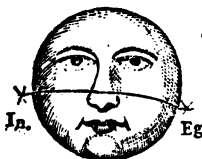
2. of the SUN, *Wednesday*, the 25th of *August*, about Seven in the Evening, both invisible to the greatest Part of *Europe*,

OCCULTATION of ALDEBARAN by the MOON.

By Dr. Halley's Tables

1756.

Sunday, 5th of *Decem.*
appar. Time, P. M.



	H.	M.	S.
Beginning	10	12	13
Middle -	10	52	51
Vis ☉ -	10	53	21
End --	11	33	8
Duration	1	20	55

at *Welling-*
borough,
Northamp-
tonshire.

Note, At the Middle, the Moon and Star are in the *Nonagefimal Degree*, and at the End, upon the Meridian, or very near it.

		H.	M.	S.	
<i>Sunday</i> , 5th of <i>Decem.</i> The same Occultation, at <i>London</i> , apparent Time. P. M.	Beginning	10	15	11	The Paral- lactic An- gle found by the 'Ds R. A. and Declin.
	Middle -	10	55	45	
	Vis ☉	10	56	30	
	End -	11	36	44	

THOMAS COWPER.

Of *What is*, and *is not*, an ALMANAC.

THE Property of the Stationers Company, by Grant, of all Almanacs, in the *English Tongue*, and the Stamp-duty on all Almanacs, in *any Language*, according to Act of Parliament, require that a true Distinction be made betwixt *What is*, and *What is not*, an Almanac. *Almanac*, an *Arabic* Word, denotes an annual or other periodical Calendar, in Contradistinction to the *Perpetual* Calendar, or Almanac, in the Prayer Book.

The *Purpose* of an *Almanac* is to point out all the Month-days, Week-days, and Holydays, with the ecclesiastical Moon's Age, for the Time the Almanac serves: wherein the *Dominical Letter* is always made *Capital*, to distinguish all the *Sundays* from the rest of the Week-days. Other *Purposes* astronomical, chronological, &c. relate not to the Stationers Company, Stamp-Office, or Ecclesiastical Jurisdiction.

The *perpetual Calendar* points out all the Days of the Month Fixed Feasts, and also Week-days, for any Year, the Dominical Letter being known: Together with the *ecclesiastical Moon's* Age for any Day of the Month, the Time of EASTER, and of the depending *Moveable Feasts*, for any Year, by the Golden Number for that Year. To which the *Calends, Ides, Nones*, are usually added.

The *periodical Almanac* pays Stamp-duty; but the *perpetual Almanac* is exempted. The Conditions are, that every *periodical Almanac*, or *Calendar*, printed on one Side of a Sheet, or Piece of Paper, shall pay one Penny Stamp; but being printed on both Sides to pay 2d. so that every Almanac serving for a Month, or Time less than a Year, shall pay according to that Rate. And as many Almanacs to pay Stamps, at one Time, as are published, for Years, on the Penalties insisted by an *Act* made in that Behalf. That no Almanack, Book, or Pamphlet, consisting of any Number of Sheets, shall pay Stamp-duty, but for the *Calendar Sheet* contained; according as it is printed on one or both Sides of the Paper.

But, by the Makers of *English Almanacs*, mixing *astronomical* and other Foreign Subjects, with the *real* Subject of an Almanac, they have confused the Distinction, by calling that an Almanac in general, which is no more so than an *astronomical Computation*. If a Performance were to be intitled the *arithmetical* or *poetical Almanac*, &c. it would not be Subject to Stamp-duty: Since it is the *literal* and *limited*, not the *allegorical*, Sense, of *Almanac*, that subjects any printed Paper, or Pamphlet, insisted and published by that Name, to pay Stamp-duty.

The *antient Ephemeris* was understood to be an *Almanac*, as being canonical, and relative to the *ecclesiastical* Jurisdiction (the Archbishop of Canterbury, Bishop of London, and their Assigns, for the Time being, licencing all *Almanacs* and *Prognostications* in the *English* Tongue, before they can be legally published) But the MODERN EPHEMERIS is no other than an *astronomical Register* of the daily Places and *Phenomena* of the Celestial Bodies, from their Motions first observed, and thence computed by *Tables*, omitting the Week-days: Consequently is no Part of an Almanac, nor subject to Monopoly, Licence, or Stamp.

Note, The Lot for the *Prize-Enigma*, fell to *Amelia*, (whose Answer is too long to insert.) — That of the *Prize-Quere* to *Curiosa* of *Canterbury*. And that of the *Prize-Question* to the Author of the improved Method of Solution.

EXTRACT of the GRANT of ALMANACS to the STATIONERS COMPANY.

“ KING JAMES I. October 29, 1603, gives and grants full
“ Power, Privilege, and Authority, to the Master, Keeper, and
“ Commonalty of the Mystery and Art of Stationers of the
“ City of London, and their Successors, that they shall and may,

“ at

“ at all Times, and from Time to Time, for ever, print and
 “ cause to be printed, all Manner of Almanacs and Prognostica-
 “ tions whatsoever, in the English Tongue, and all Manner of
 “ Books and Pamphlets tending to the same Purpose, and which
 “ are not to be construed any other than Almanacs or Prognostica-
 “ tions allowed by the Archbishop of Canterbury, Bishop of
 “ London, or their Assigns, or One of them, for the Time being,
 “ or by such other Person or Persons, as they, or either of them, for
 “ the Time being, shall, in that Behalf, assign, or appoint, by what
 “ Name, or Titles soever, the same shall be intitled, named, or
 “ called, as shall be printed within this Realm of England. † —
 “ That all other Persons, but the said Company, are prohibited
 “ printing, or causing to be printed, any Almanacs or Prognostications,
 “ Books or Pamphlets, in the English Tongue, tending to the same,
 “ or like Purpose, and that may be in any wise construed and taken
 “ as Almanacs and Prognostications, (a) by what Titles, or Ad-
 “ ditions, soever, the same be, or shall be, intitled, or named. — Nor
 “ shall buy, utter, or sell, or cause to be bought, uttered, or sold,
 “ any other Almanacs, Prognostications, or other Books, in the En-
 “ glish Tongue, tending to the same Purpose, than such only as
 “ shall be printed by the said Company, upon Forfeiture of all
 “ such Almanacs, Books, or Pamphlets and Prognostications; and al-
 “ so upon Forfeiture of 12d. for every Almanac and Prognosti-
 “ cation; besides other Pains and Penalties: All which Forfei-
 “ tures to be for the King.” — See this and other GRANTS, at
 large, with the ORIGINAL CHARTER of the Institution of
 the Stationers Company, by Philip and Mary.

Printed and Sold by R. NUTT, in the Old-Bailey. Price 2 s.
 6 d.

† In Scotland, Ireland, East and West-Indies, and Dominions
 beyond Sea, Almanacs, in the English Tongue, may be printed,
 published, and sold, independant of this Grant. See our Almanac
 for the Island of Antigua, and rest of the Leeward Islands, 1756;
 printed at Antigua.

(a) Henry III. of France, decreed, by an Ordinance of 1579,
 That no Almanac-maker should presume to give Predictions re-
 lating to Civil Affairs, in Terms either express or covert (see
Cyclopædia, under the Word Almanac) the same Ordinance by a
 BRITISH PARLIAMENT, at the Remonstrance of a British
 Prelacy, might be productive of the same good Effect, by the
 Suppression of Ribaldry and Error, and the Promotion of Truth,
 Morals, and useful Science: The common Almanacs being a
 common Naisance to the Public, contrived by the Dealers in
 Deceit, to get Money by, like the Imposture of Metho-
 distism.

ERRATA. Page 25. line 4. from Bottom read $\propto \frac{5\frac{1}{2} - 1}{2}$

= 7,861. P. 32, l. 2 and 3. from Bottom, for 1st. &c. read
 2^d. &c. ©'s Place. 20

To investigate the Value of any Number of Gold Pieces?

At 18s. each. $10 = 9l.$
 $\frac{1}{10}$ 1 subtr.

9 Rem.

Hence, the Tenth taken from the whole Number, will give the Value in Pounds, at 18s. each Piece.

At 27s. each. $20 = 27l.$
 $\frac{1}{2}$ 10 add

30 Sum

3 subtr.

27 rem.

Hence, the Half added, and Tenth of that Sum taken away, will leave the Value in Pounds, at 27s. each Piece.

At 36s. each. $5 = 9l.$
 by 2

10 Prod.

1 subtr.

9 rem.

Hence, double the Number of Pieces, and one Tenth taken from that Product, will leave the Value in Pounds, at 36s. each Piece.

At 3l. 12s. each. $5 = 18l.$
 by 4

20 Prod.

2

18 rem.

Hence, four Times the Number of Pieces, and one Tenth taken from that Product, will leave the Value in Pounds, at 3l. 12s. each Piece.

The same Method is general, and reduces Currency to Sterling, &c.

GENERAL RULES for finding the Value of Simple Interest.

$\frac{1}{2}$ of $\frac{1}{10}$ of any Sum is the simple Interest of that Sum for a Year, at 5l. per Cent.

Consequently 2, 3, 4, 5, &c. that Sum is the Interest for 2, 3, 4, 5, &c. Years.

Likewise, $\frac{1}{2}$, $\frac{5}{12}$, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{1}{6}$, $\frac{1}{12}$, added, or subtracted, to or from, that Sum, will be the Simple Interest for 6, 5, 4, 3, 2, or 1 Months more, or less, than for that Time.

EXAMPLE. What is the Simple Interest of 340l. 15s. 10d. for 5 Months?

	$\frac{1}{10}$	34	1	7
Simple Interest for a Year	$\frac{1}{2}$	17	0	$9\frac{1}{2}$
			by	5

	$\frac{5}{12}$	85	3	$11\frac{1}{2}$
Simple Interest for 5 Months	—	7	1	$11\frac{3}{8}$

As to Simple Interest for Days, use a Decimal Table of the Interest of any Sum for a Day, to be multiplied by the No. of Days at Interest.

F I N I S.

